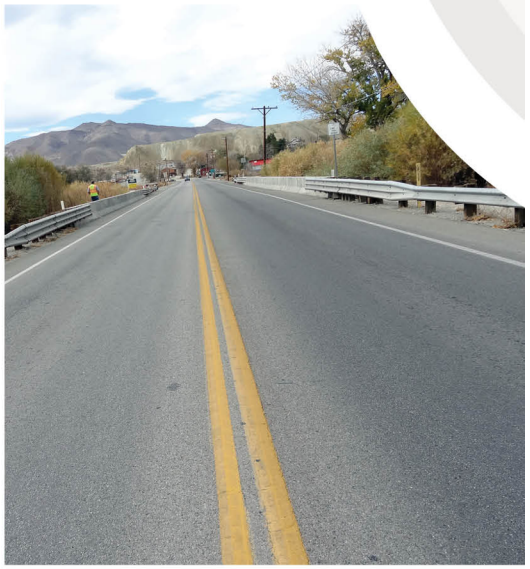
STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

LYON COUNTY Bicycle Plan



PREPARED FOR: LYON COUNTY
SPONSORED BY: NDOT

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NEVADA DOT SAFE AND CONNECTED

Kimley»Horn

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- Dan Newell, City of Yerington
- Rob Loveberg, Lyon County Planning
- Donna Inversin, Muscle Powered
- Cortney Bloomer, Carson City Health & Human Services, Safe Routes to School
- Dennis Stark, Nevada Bicycle and Pedestrian Advisory Board
- Shari Whalen, City of Fernley
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LIST OF ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
FHWA	Federal Highway Administration
GIS	Geographic Information Systems
HSIP	Highway Safety Improvement Program
MAP-21	Moving Ahead for Progress in the 21st Century Act
MPO	Metropolitan Planning Organization
NACTO	National Association of City Transportation Officials
NBAB	Nevada Bicycle Advisory Board (Converted to NBPAP in 2011)
NBPAB	Nevada Bicycle and Pedestrian Advisory Board
NDOT	Nevada Department of Transportation
NHPP	National Highway Performance Program
NHS	National Highway System
NHTSA	National Highway Traffic Safety Administration
SHSP	Strategic Highway Safety Plan
SRTS	Safe Routes to School
STP	Surface Transportation Program
TAP	Transportation Alternatives Programs
TMA	Transportation Management Areas

1. INTRODUCTION

Communities throughout Nevada have been steadily expanding their emphasis on improving bicycling over the last few decades. In February 2013, NDOT formalized this momentum in the Nevada Statewide Bicycle Plan (State Bike Plan), which focused on areas outside of the four Metropolitan Planning Organizations (MPO) in Nevada, including the Carson Area Metropolitan Planning Organization (CAMPO), the Regional Transportation Commission of Southern Nevada (RTC), the Regional Transportation Commission of Washoe County (RTC), and the Tahoe MPO (TMPO). Representatives from NDOT and other public and private organizations throughout the state came together to support bicycle planning within the development of this plan. The State Bike Plan focused on recommendations to improve bicycling through Policies, Programs, Legislation, Tourism, and Infrastructure Improvements. **Appendix A** contains the website to where the State Plan can be found (www.bicyclenevada.com).

The first strategy listed within the State Bike Plan is for NDOT to assist local jurisdictions with adopting local bicycle plans that are endorsed by the Nevada Bicycle and Pedestrian Advisory Board (NBPAB). The Lyon County Bicycle Plan has been prepared in support of that strategy. This Plan references the major elements of the State Bike Plan that are relevant to Lyon County with a focus on documenting the existing and proposed infrastructure improvements desired within Lyon County, as well as, adjacent areas.

This Plan has been developed with significant input from county and local representatives, cycling advocates from Lyon County and various community groups. The project is being led by NDOT in coordination with the NBPAB.

2. PUBLIC INVOLVEMENT

The development of this Plan was guided by local coordination and public input. Public input was gathered during the development of the State Bike Plan. A public meeting for the State Bike Plan was held in Fernley, Nevada on November 17, 2011. This meeting was attended by fourteen people and the following summarizes the key topics identified at the meeting:

Largest Need:

- Additional education, as well as local and regional facilities

Biggest Issue:

- Increased traffic has significantly reduced the perception of safety within the town of Fernley over the last 15 years

Greatest Asset:

- Numerous bicycling opportunities and support for riders of all ages

Additional Information:

- During the visit, a bike tour was led by Shari Whalen
- There is a need to connect Fernley to Wadsworth

Section 3 of the State Bike Plan includes a summary of all public input received, which was from 15 public meetings throughout the state and 777 responses to a user survey. The following is a summary of 51 key issues identified from the surveys that were typical to bicycling in rural counties in Nevada.

1. Advocacy Groups Lacking – Lack of organized bicycle advocacy groups at the local level.
2. Alternate Roadway Corridors Not Inventoried – There are old roads that parallel newer roads in many places throughout rural Nevada. However, they are in various states of repair (some are used, others look partially or entirely abandoned); they are often hard to access and there is not an inventory of their availability (locations) or suitability for bicycling.
3. Alternate Corridors Not Preserved – Former railroad rights-of-way corridors that would make excellent trails are being (or were) lost due to lack of information and knowledge regarding the acquisition and preservation of rail corridors. Stretched budgets have also resulted in a lack of staff resources to pursue rail-trail opportunities.
4. ATVs on Bike Facilities – ATVs, while regulated, are often allowed to ride on designated bicycle facilities including paved pathways and mountain bike trails.
5. Bicyclists Not Respected by Motorists – Many motorists do not respect bicyclists - bicycling is not a legitimate part of local culture. Bicyclists relayed stories of harassment and intimidation by motorists.
6. Bicyclists Often Riding Wrong Way – Observed a lot of wrong-way riding by bicyclists.
7. Bike Lane Width Sometimes Includes Gutter – Gutter pan sometimes included in the width of a bicycle lane even if pavement to gutter pan edge is not smooth.
8. Bike Plans for Communities Lacking – Towns and counties do not have adopted, current bicycle plans. Since NDOT requires that proposed bicycle facilities are in an adopted plan, opportunities to construct bicycle facilities as part of NDOT projects or to receive state/federal funds are often lost. Many towns and counties do not have the time, money, or expertise to develop a bicycle plan.
9. Bikeways Not Coordinated Across Jurisdictional Boundaries – Town and county bicycle planning is not always coordinated. As a result, there is often a lack of connectivity between the more urbanized town

areas and bicycle destinations (e.g. state parks, public lands, mountain bike trails, and low-volume country roads) in the rural, county areas.

10. Bikeway Innovation Lagging – Newer bicycle facility options such as shared lane markings are not widely known about or used.
11. Bikeways Have Ridge at Edge – Some overlays stop at the shoulder resulting in a ridge (lip) that can cause bicyclists to fall.
12. Bikeways Lacking in Tunnels – There are few provisions for bicyclists going through tunnels (e.g. lack of signs or bicycle activated flashing lights to warn motorists as is done at tunnel in Tahoe).
13. Bikeways Lacking Along Hwy 50 – Highway 50 is the most popular cross county bicycling route and has significant bicycle travel but lacks a bikeable shoulder through many mountain passes with limited visibility around curves.
14. Bikeways Lacking Access to Mountain Bike Areas – Mountain bike areas close to rural towns are often not accessible by bicycle from the town due to lack of facilities (e.g. road leading out of town is high speed and does not have shoulders). Consequently, bicyclists find it necessary to load their bikes on their motor vehicles and drive to nearby mountain bike trail heads.
15. Bikeway Terms Not Understood – There is a lack of understanding and use of terms to describe various bicycle facilities (e.g. bike route, bicycle lane, bicycle path etc.).
16. Bikeway Variances – Local zoning boards give variances to developers, thereby losing opportunities to install bike lanes and paths required by local zoning regulations.
17. Education Materials Not Readily Available – Locals don't know where to get bicycle educational materials for schools, summer recreational programs, etc.
18. Education Programs Lacking – There are very few bicycle safety education programs offered to children in country towns. In the past, rodeos and other safety programs were more available through schools, and local police and sheriff's departments. These have become less frequent or have disappeared over time.
19. Enforcement Lacking and Uninvolved – Law enforcement officials are typically not involved in bicycle safety (i.e. they do not ticket motorists or bicyclists and they no longer provide safety training rodeos for children).
20. Facilities for Aging Populations Lacking – There are aging populations in many of the small country towns that lack adequate trail (sidewalk) facilities to exercise and access local services.
21. Funding Opportunity Awareness Lacking - Local, rural jurisdictions are not always aware of state funding opportunities. Consequently, there are times when there is a lack of applications for some pots of money.
22. Funding Shortage for Bike Infrastructure – Lack of funding for bicycle infrastructure improvements.
23. Gravel on Facilities – Existing bicycle facilities are not maintained (e.g. trails in disrepair, bicycle lanes and shoulders are full of gravel).
24. Gravel on Shoulder – Gravel on roadways at locations where there are access roads/driveways.
25. Helmet Use Low – Helmet use by bicyclists, especially children is low.
26. High Speed Right Turn Lanes – High speed right turn add lanes on arterial streets create a challenge for bicyclists going straight.
27. Infrastructure Inconsistent – There is a lack of consistency with regard to the design of NDOT vs. non-NDOT roads (e.g. lane width, shoulder width, curbs radii etc.).
28. Interstate Access – For bicyclists traveling from urbanized to rural areas, there are no informational signs to indicate where they are allowed to access interstate freeways.
29. Rumble Strip Takes Up Shoulder – Rumble strips are often placed to right of white edge line on the 12- to 24-inch shoulder forcing bicyclists to ride to the left of the edge line. Also, design and application of rumble strips are inconsistent.

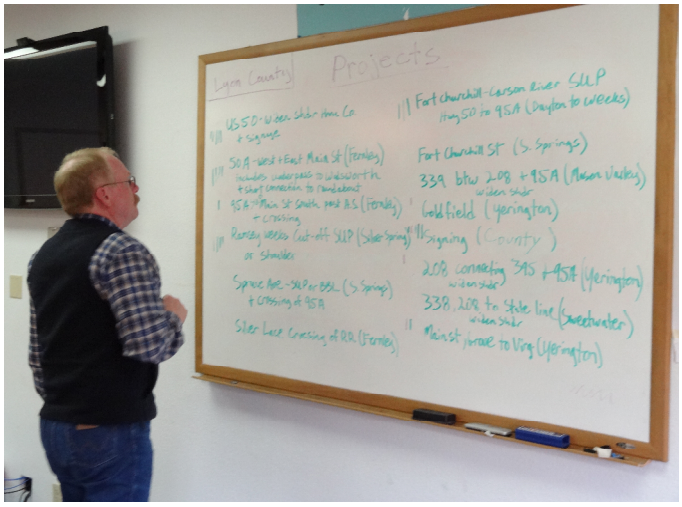
30. Interstate By-pass Wayfinding Lacking – There are no way-finding signs to guide bicyclists through towns in rural areas. This is particularly important for bicyclists who have exited an interstate freeway and must travel through town and back to a freeway entrance.
31. Interstate Locations That Bikes Must Exit Unclear – It is not clear where bicyclists traveling on interstate freeways entering urbanized areas are required to exit the freeway.
32. Interstate Way-Finding Lacking – For bicyclists traveling on interstate freeways, there are no way-finding signs to indicate where they should exit to access small towns.
33. Legality of Bicycling on Sidewalks Not Clear – Lack of clarity regarding bikes on sidewalks. State law says that bicyclists are not allowed on sidewalks unless granted "permission" by "owner".
34. Locals feel NDOT Not Prioritizing Bicycling – Some locals feel NDOT doesn't really care about bicyclists and does not recognize the importance of touring bicyclists to economies of small towns. Examples cited include: a) rumble strips in narrow shoulders of NDOT roads; 2) NDOT projects that ignored local requests for bicycle facilities; and 3) non-responsiveness of NDOT officials in district offices. Some locals are concerned that NDOT does not value their input. Locals complained that by the time they find out about a project, it is already scoped, budgeted, and designed.
35. Maps of Local Bike Facilities Lacking – Lack of bicycle maps at the local level that show bicycle facilities, water, bike shop and destinations such as mountain bike areas.
36. Rumble Strips Next to Guard Rail – Rumble strips are sometimes installed immediately adjacent to guardrails, which is inconsistent with state guidelines.
37. School Crossing Guards Lacking – There are often no school crossing guards at crossings of arterial streets near schools (state, county and local roads).
38. School Kid's Bikes Need Repairs – Children don't know how to fix their bikes (e.g. flat tires due to puncturevine, also known as goatheads).
39. School Support and Facilities Lacking – Some local school districts do not recognize or support bicycling and/or walking to school; and they are not aware of SRTS programs and grants. Children often cannot bicycle to school due to lack of bicycle facilities.
40. Schools Lacking Adequate Bike Parking – There is often a lack of bicycle parking facilities at schools.
41. Shared Use Path Crossing Advanced Motorist Signing Lacking – Inadequate warning/crossing signs for motorists at locations where paths cross roadways.
42. Shared Use Path Intersection Priority – Assignment of right-of-way at trail crossings. Some trails arbitrarily require trail users to stop at all crossings, including driveways.
43. Shoulders Lacking or Too Narrow – Many state, county and local highways do not have a shoulder, have a very narrow shoulder, and/or have the entire shoulder covered in a rumble strip.
44. Special Event Participants Lacking – Special events (century rides, etc.) need more participants.
45. Special Event Permitting Unclear – Lack of clarity as to whether permits are required for special events with more than 50 participants and the requirements for the application. Regional NDOT offices may have different policies.
46. Special Event Signing Requirements Not Clear – Lack of clarity with regard to state rules regarding way-finding guidance (arrows on the pavement and temporary signs) to direct bicyclists participating in special events (e.g. century ride).
47. Touring Bicyclist Economic Impact Not Quantified – There are no numbers regarding the importance (or potential) of bicycling to the economy of rural towns.
48. Touring Bicyclist Travel on Through – Bicycle tourism in Nevada is an untapped resource. Touring bicyclists do not stop in Nevada to bike (they go on to Utah, Colorado, and other destinations).
49. Touring Bicyclists Lack Water – Touring bicyclists lack places where they can find water. NDOT facilities in rural areas may be able to provide water.

50. Utility Corridors Don't Officially Allow Bikes – Authorities (agencies) that operate irrigation and drainage networks do not allow bicycle facilities on dikes and service roads. However, informal use is widespread and often tolerated.
51. Workzones – On interstate freeways, state highways and local roadways, space for bicyclists is not routinely provided through construction zones. For example, it is not uncommon to see motorists channeled into one lane or on the shoulder, leaving no place for the bicyclists to ride.

These issues identified in the State Bike Plan were used as a baseline for a workshop held specifically for development of the Lyon County Bicycle Plan.

A two-day workshop was held on November 6 and 7, 2013, in Dayton, Nevada. The purpose of the workshop was to gain input from representatives of the local community on specific bicycling conditions in Lyon County and to develop recommendations on proposed bicycle facility improvements as well as recommendations for policy, program, legislation, and tourism improvements for bicycling. The following is a list of attendees at the workshop:

- Rob Loveberg, Lyon County Planning
- Mike Workman, Lyon County Public Works
- Dan Newell, City of Yerington
- Shari Whalen, City of Fernley
- Cortney Bloomer, Carson City Health & Human Services, Safe Routes to School
- Dennis Stark, Nevada Bicycle and Pedestrian Advisory Board
- Donna Inversin, Muscle Powered
- Chas Macquarie, Muscle Powered/Lumos Engineering
- Debra Starnes, NDOT District 2
- Tim Rowe, NDOT Safe Routes to School
- Albert Jacquez, NDOT Bicycle/Pedestrian Education
- Bill Story, NDOT Project Manager
- Mike Colety, Kimley-Horn and Associates, Inc.
- Michael Hintze, Toole Design Group



The workshop covered a variety of bicycling topics and was followed by a field assessment. The schedule is included below:

DAY 1	8:00 – 8:30	Meet-and-Greet
	8:30 – 9:00	Overview of planning process, review Statewide Bike Plan
	9:00 – 9:30	Review bicycle facility types
	9:30 – 12:00	Review maps, identify opportunities, barriers
	12:00	Adjourn
	1:00 – 6:00	Field assessment
DAY 2	8:00 – 12:00	Field assessment
	1:00 – 2:30	Review maps
	2:30 – 5:00	Plan development – interactive exercise
	5:00	Adjourn

The attendees offered input on good existing bicycling conditions, existing issues, desired routes, necessary programs and policies, and then specified on priorities. The field assessment reviewed existing conditions and identified potential areas for improvements. Notes from the countywide field assessment are included in **Appendix B**.

3. EXISTING CONDITIONS

3.1 Countywide Observations

Bicycling conditions throughout Lyon County were observed as part of the development of the State Bike Plan and during the field assessment as a part of the workshop. The following are examples of good existing bicycling conditions in Lyon County:

- Major cross country bike route
- High potential for improving conditions
- Relatively flat terrain
- History/Scenery attract visitors
- Proximity to several large populations
- Opportunities for road and mountain biking
- Compact communities facilitate short trips
- Pent up demand for healthy activities
- Wide shoulders in some roads e.g. US 50, 5ft, parts of US 95A
- Many destinations and features, e.g. Carson River, Lahontan Reservoir, Virginia City
- Potential for scenic rides
- Shorter distances between cities/towns
- Abandoned rail corridors
- Better weather
- Relatively safe compared to larger more urban areas
- School siting allows for facilities to be used by elementary and junior high school

Similarly, the following are examples of non-desirable conditions that can be observed in Lyon County:

- Lack of funding (capital and maintenance)
- High speeds on state highways, no facilities, protection
- No bike shops
- Goatheads (big barrier for kids)
- Debris in shoulders
- Culture/lack of sensitivity
- Narrow/constrained shoulders (rumble strip)
- Bicycles not seen as acceptable form of transportation
- Lack of connectivity
- Lack of bike parking or requirements for parking
- Heavy truck traffic e.g. triples, migrant drivers
- Lack of enforcement
- Lack of understanding of laws by enforcement
- ATV conflicts/user conflicts
- Lack of education – general public
- No advocacy group
- Lack of infrastructure especially for less experienced riders

- Lack of way finding, info about routing

Figure 1 shows a map of population areas found within Lyon County from the 2010 Census.

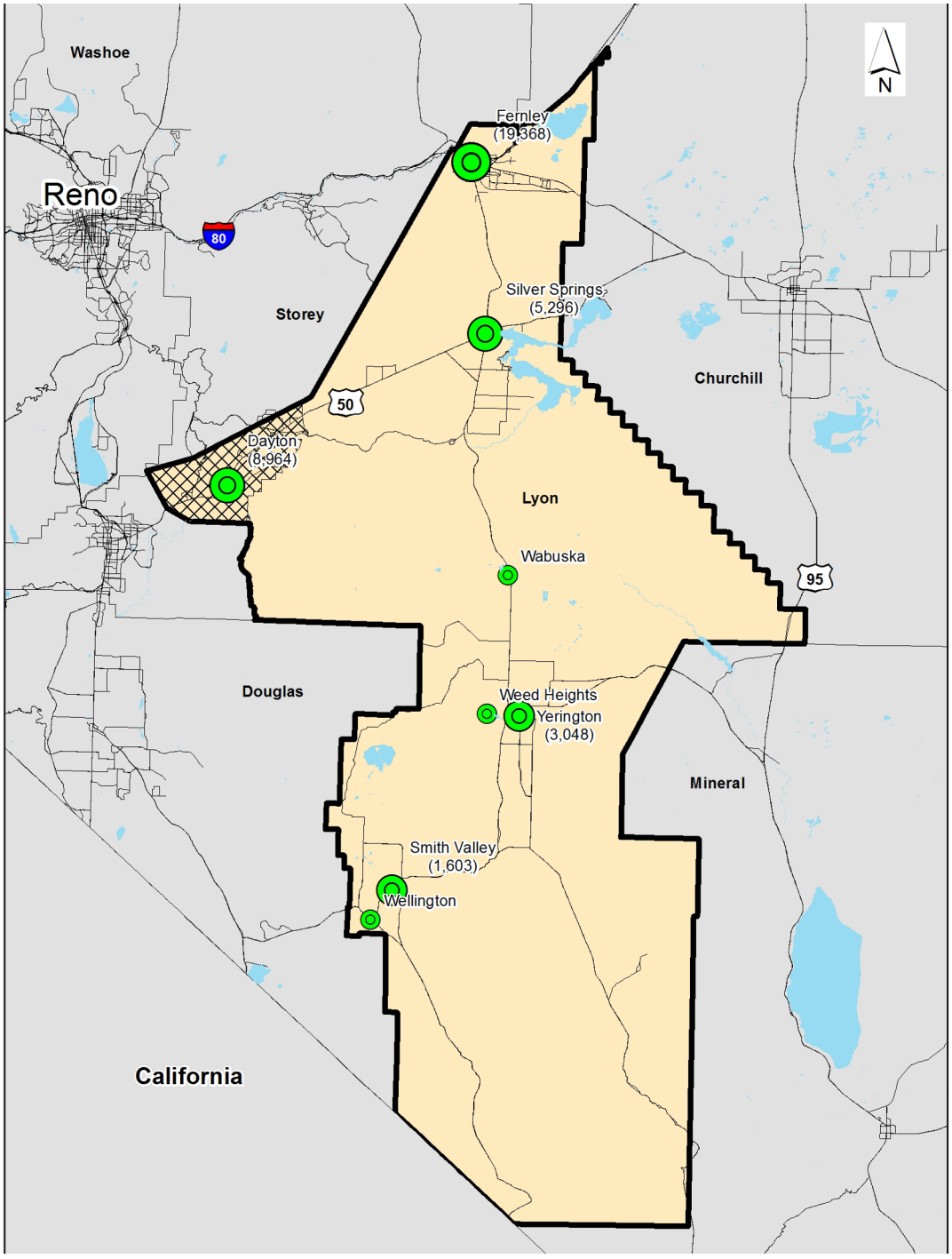


Figure 1 – Lyon County Population Point Map

3.2 Existing Documents, Policies, Programs and Legislation

Existing bicycle related documents from Lyon County were collected as part of the development of the State Bike Plan. The following sections are a summary of bicycle related documents, policies, programs and legislation in Lyon County in matrix form (**Table 1**) and paragraph form.

	Fernley	Yerington
Bike Plan (NDOT Approved)	1997/1999	2000
Existing/Proposed Facility Map	Yes	No
Major Bikeway Initiatives	Yes	No
Laws	No	No
Policies	No	No
Safe Routes to School Program	Yes	No
Construction Standards	No	No
Maintenance Expectations and Protocols	No	No
Cycle Tourism Initiatives	No	No

Table 1 – Lyon County – Existing Bicycling Documents, Policies, Programs, and Legislation

3.2.1 Fernley Bicycle Plan 1997/1999

Fernley Bicycle Plan proposes to create an interconnected community in which its residents can walk or bike easily and safely between residential areas, to and from destination in Fernley and to other communities nearby.

3.2.2 Yerington Plan 2000

The Yerington Plan is a map that designates which roadways are Bicycle Routes, including local roadway and the State Highways in Yerington.

3.2.3 Fernley Existing/Proposed Bicycle Plan Map

Fernley's existing bicycle plan map specifies NDOT identified bicycle corridors, bike path/multi-use trail and bicycle lanes. Proposed bicycling paths include currently proposed and funded bicycle lanes and bicycle route with shoulder/outside lane improvements required.

3.2.4 Fernley Major Bikeway Initiatives

City of Fernley Safe Routes to School Plan, SR 828 (Farm District Road) Multi Use Path, US 95 Multi Use Path

3.2.5 Safe Routes to School Program

Lyon County currently participates in the Western Nevada Safe Routes to School (SRTS) Program. The program incorporates the Five E's: Evaluation, Education, Encouragement, Engineering and Enforcement. The goal of SRTS is to get more children bicycling and walking to schools safely on an everyday basis. This improves the built environment and increases opportunities for healthy physical activity for everyone.

3.2.6 Legislation

Although there was no specific bicycle related legislation identified in Lyon County, existing statewide legislation related to bicycling is summarized in Section 4.3.9 on Page 39 of the State Bicycle Plan. This legislation is found in **Appendix C**.

3.2.7 US Prioritized and Alternative Bicycle Corridors

The US Bicycle Route System (US BRS) is a proposed national network of bicycle routes that will link urban, suburban, and rural areas using a variety of appropriate cycling facilities. US Bicycle Routes were first established in 1982. In October, 2008, AASHTO's Board of Directors passed a resolution in support of the National Corridor Plan. The existing National Corridor Plan includes prioritized corridors along existing roadways. In Nevada, priority bicycle corridors exist along the I-80 corridor (USBR 50), along US 50 (USBR 79), and along I-15 (USBR 70). The alternate corridors in Nevada primarily follow US 95 and US 93. These US Bicycle Routes are shown on the maps in **Section 6**.

3.2.8 Adventure Cycling Bicycle Routes

The Adventure Cycling Route Network is an established cycling route network with 44,662 miles of routes throughout North America. The Adventure Cycling Route Network is used by thousands of cyclists each year for bicycle touring. The Western Express Bicycle Route is a 1,579 mile (2,541 km) bicycle touring route that connects San Francisco, California to the TransAmerica Bicycle Trail in Pueblo, Colorado, traveling through California, Nevada, Utah, and Colorado. Within Nevada, the Western Express primarily follows US 50 and is the most heavily used bicycle touring route. The Western Express is shown in the maps in **Section 6**.

3.3 Crash Data

As part of the State Bike Plan, bicycle crashes with motor vehicles were reviewed. NDOT annually completes a crash data review for the preceding three (3) years. The most recent report includes the years 2008 to 2010. It is important to recognize that most bicycle crash data only includes bicycle crashes with motor vehicles that are significant enough to require a police report. The data included in NDOT's report does not include minor collisions with bicycles and motor vehicles that do not have a police report, nor does it include bicycle crashes that do not include a motorist (i.e., crashes between two bicycles or a single bicycle crash). A summary of the bicycle and motor vehicle crashes for years 2008 to 2010 in Lyon County is presented in **Table 2.**

COUNTY	2008				2009				2010			
	TOTAL INJURY CRASHES	TOTAL INJURIES	TOTAL FATAL CRASHES	TOTAL FATALTIES	TOTAL INJURY CRASHES	TOTAL INJURIES	TOTAL FATAL CRASHES	TOTAL FATALTIES	TOTAL INJURY CRASHES	TOTAL INJURIES	TOTAL FATAL CRASHES	TOTAL FATALTIES
CARSON	11	12			6	6			8	8		
CHURCHILL	5	5	1	1	3	3			1	1		
CLARK	243	250	6	6	421	432	5	5	380	399	3	3
DOUGLAS	6	6			9	9			10	10		
ELKO	3	3			4	4			1	1		
ESMERALDA												
EUREKA												
HUMBOLDT	2	2										
LANDER												
LINCOLN												
LYON	1	1			4	4			2	2		
MINERAL												
NYE					2	2			4	4		
PERSHING												
STOREY	1	1										
WASHOE	111	115			106	112	1	1	98	102	3	3
WHITE PINE												
TOTAL	383	395	7	7	555	572	6	6	504	527	6	6

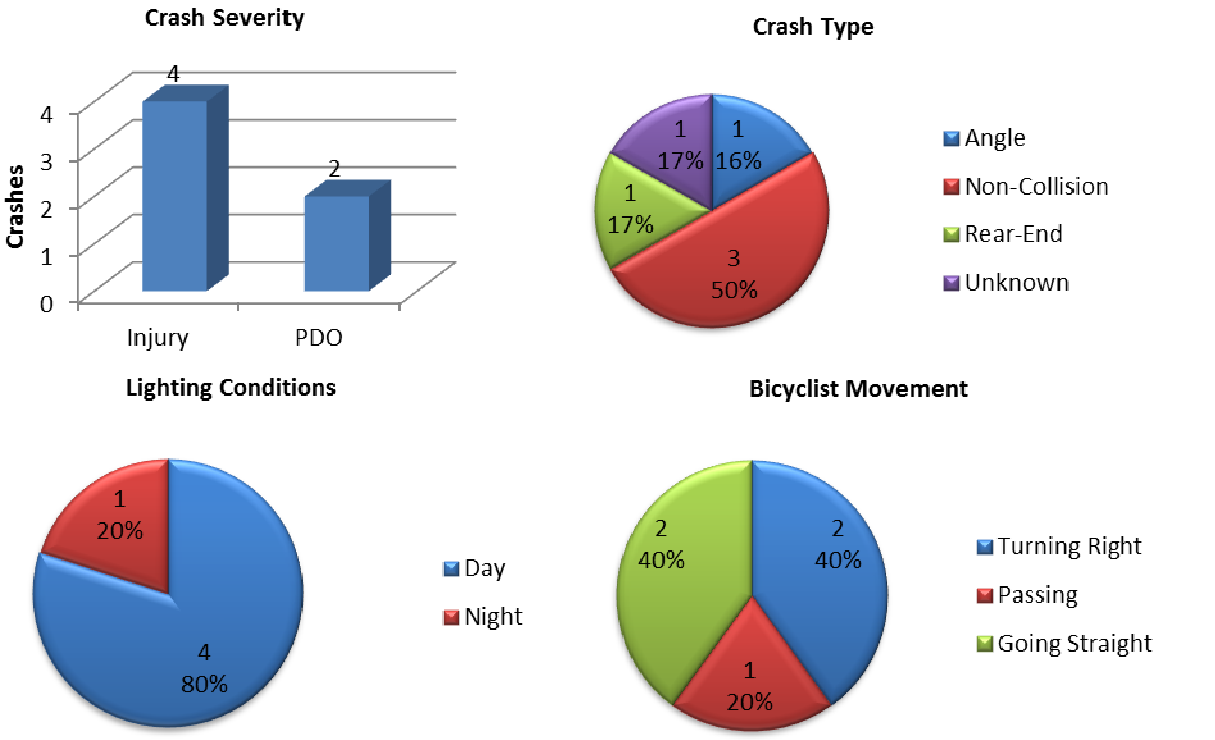
Source: NDOT Crash Data Report 2008-2010

Table 2 - Summary of Lyon County Bicycle and Motor Vehicle Crashes 2008 to 2010

The following are additional key results from the NDOT crash data for all of the crashes that occurred outside of the four MPOs within Nevada between the years 2008 and 2010:

- Bicycle crashes trended up over the three years, but fatalities decreased slightly.
- Failure to yield is the most common motorist factor.
- Improper crossing and wrong side of road are the most common bicyclist factors, followed by darting, failure to obey signs, signals or officer, and failure to yield right of way. Not visible, inattentive and lying in roadway are minor contributing factors.
- There are typically more bicycle crashes and fatalities per day on weekdays than on weekends. Most collisions are between 3:00 and 5:00 PM, with Noon to 3:00 PM being secondary.

NDOT also provided Geographic Information System (GIS) bicycle crash data for Nevada from 2006 to 2011. **Figure 2** contains a summary of the crash data provided for Lyon County.



Source: NDOT Crash Data 2006-2011

Figure 2 – Summary of Bicycle and Motor Vehicle Crashes Lyon County 2006-2011

The data from NDOT has been spatially located to where the event occurred, and is coded with information related to the incident including crash severity and type. **Figure 3** is a GIS map illustrating the exact location of each crash within Lyon County.

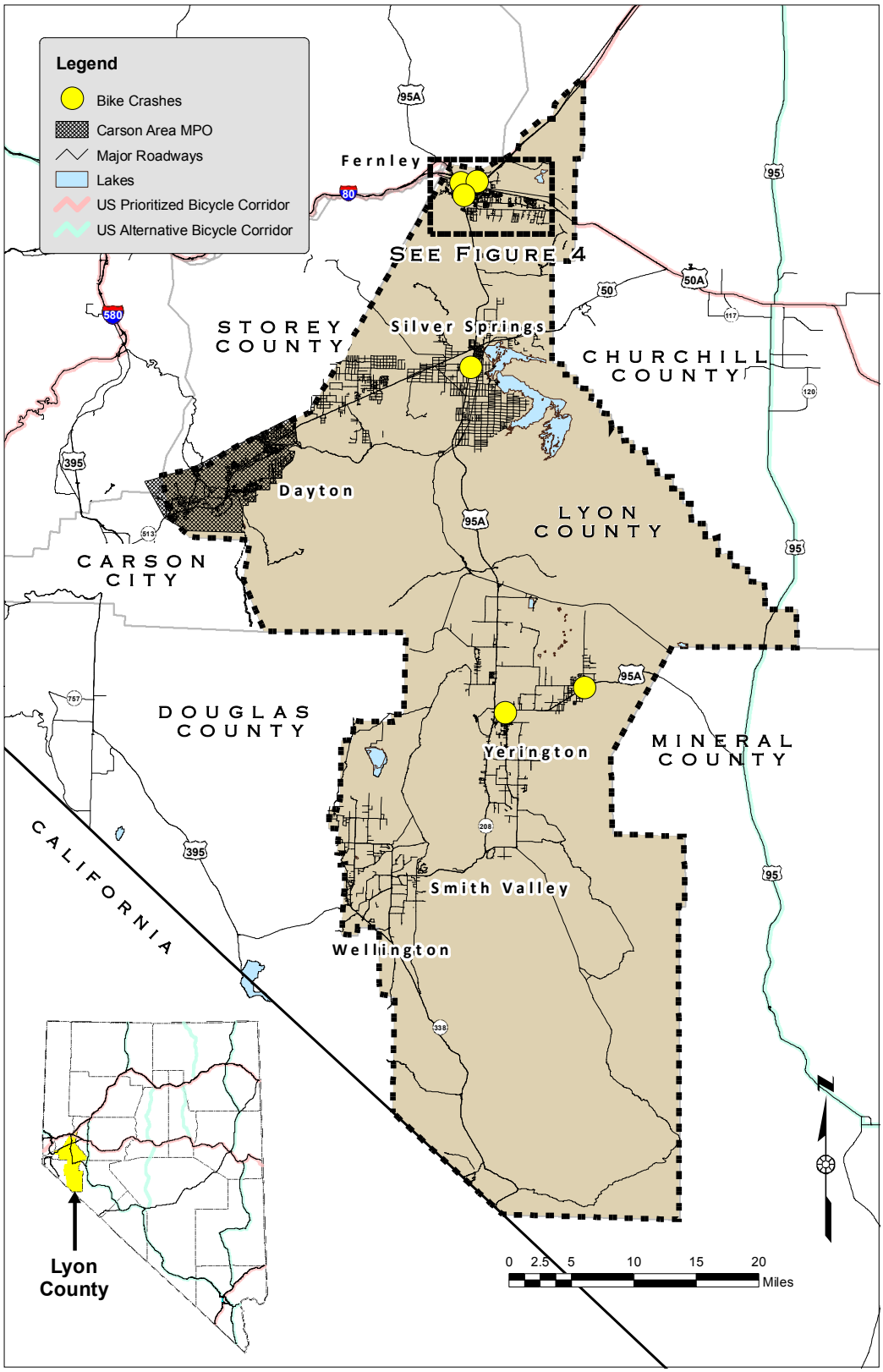


Figure 3 – Reported Bicycle/Motor Vehicle Crashes in Lyon County

Figure 4 is a GIS map illustrating the crashes within Fernley, where many of the County's crashes are concentrated.

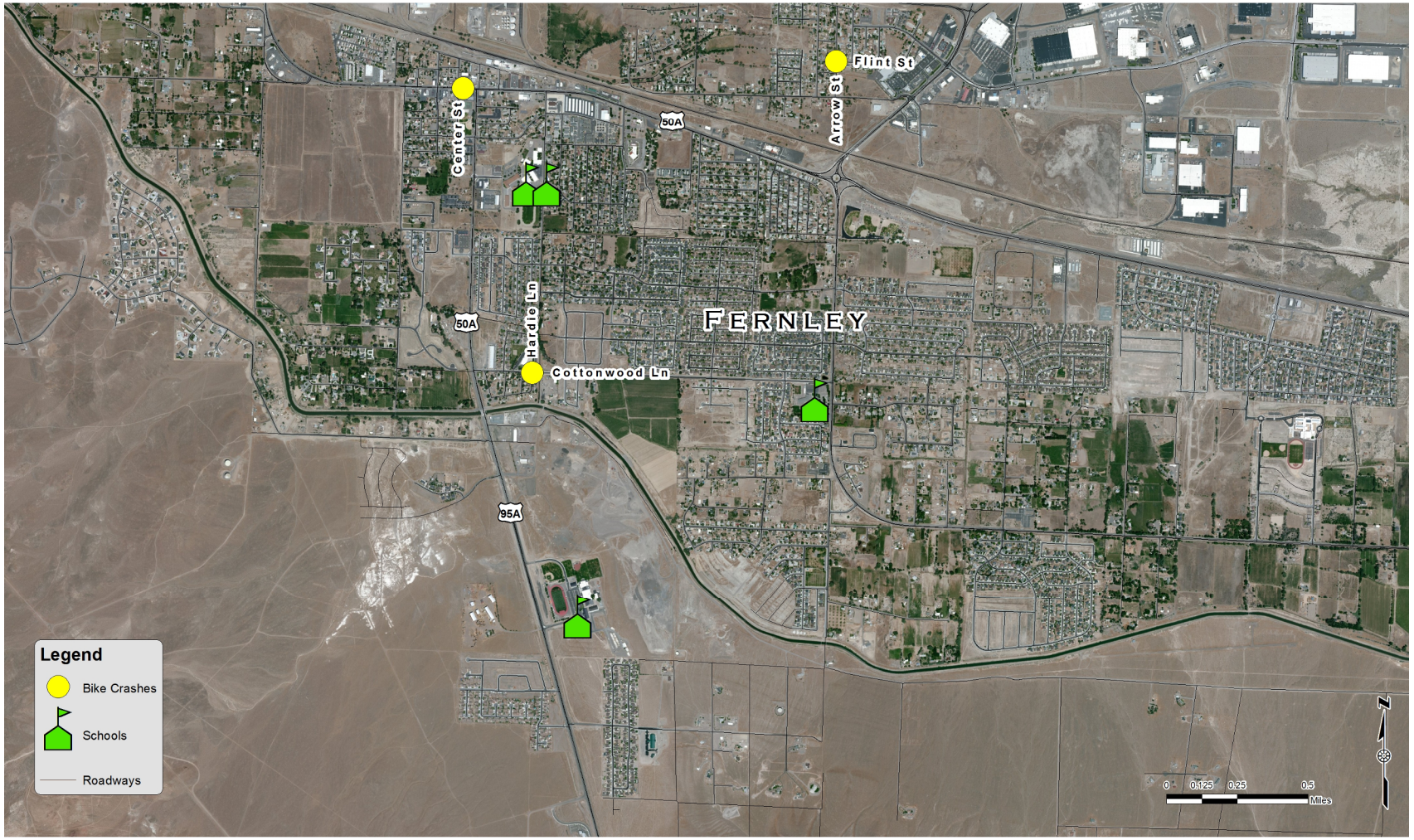


Figure 4 – Reported Bicycle/Motor Vehicle Crashes in Fernley

4. VISION, GOALS, AND OBJECTIVES

The Vision, Goals, and Objectives for the Lyon County Bicycle Plan are described in the following sections.

4.1 Vision

For Lyon County residents and visitors of all ages and abilities to experience a convenient, pleasant, and safe bicycling environment.

4.2 Goals

There are two major goals of the Lyon County Bicycling Program that will guide the specific objectives and strategies within this plan.

- Increase bicycling's mode share throughout Lyon County in and between communities, both by residents and tourists.
- Reduce crashes involving bicyclists and eliminate all bicyclist fatalities in support of Nevada's "Zero Fatalities" and the national "Towards Zero Deaths" initiatives.

4.3 Objectives

The following objectives are the specific tasks to be evaluated to determine the success of this Plan and bicycling in Nevada.

- Objective 1: Increase Local Support of Bicycling
- Objective 2: Increase Bicycle Tourism
- Objective 3: Accommodate Appropriate Bicycling Facilities on all Roadways in Nevada Open to Bicycling
- Objective 4: Increase Motorists' and Bicyclists' Compliance with Laws Associated with Bicycling

5. RECOMMENDED STRATEGIES

The following strategies have been developed for Lyon County to support the four main objectives of this Plan.

5.1 Objective 1

Increase Local Support of Bicycling

Strategy 1A: Improve the connectivity of bicycle facilities between population centers in a safe and effective manner.

Strategy 1B: Provide guidance and technical support to the local jurisdictions, including the towns and general improvement districts for developing bicycle plans that are consistent with the County and State Bicycle Plans.

Strategy 1C: Collaborate with the towns and general improvement districts to employ consistent design and maintenance policies for bicycle facilities.

Strategy 1D: Work with local agencies on the creation of funding mechanisms for bicycle related projects.

Strategy 1E: Collaborate with local agencies in applying for available state and federal funding opportunities and programs that are available for bicycle related projects.

Strategy 1F: Work with the Lyon County School District and other health advocates and agencies to promote bicycling as part of a healthy lifestyle for children and adults, including SRTS, Bike Month, and Nevada Moves Day.

Strategy 1G: Work with the Lyon County School District, Western Nevada SRTS Program, Towns, and General Improvement Districts to develop bicycle plans that identify safe routes and identify needed bike facilities for each school and incorporate the needs of each school into the County's Community Development overall planning.

Strategy 1H: Establish a Bicycle Advisory Committee or Bicycle and Pedestrian Advisory Committee that provides guidance to the County Commission on bicycle (and pedestrian) related issues in Lyon County.

Strategy 1I: Encourage communities and businesses within each county to achieve "Bike Friendly Status" from the League of American Bicyclists (www.bikeleague.org/bfa). This will help promote each community or business as a destination for bicyclists.

Strategy 1J: Adopt a Complete Streets Policy that specifies that all transportation projects with new roadways or modifications to existing roadways are required to include appropriate bicycle accommodation.

5.2 Objective 2

Increase Bicycle Tourism

Strategy 2A: Encourage the County's Economic Vitality Division to collaborate with the State's Office of Economic Development, local governmental agencies, and business organizations to promote bicycle tourism.

Strategy 2B: Assist in the development of bicycle tourism materials related to road and mountain bicycling, including maps that show destinations and designated routes, if supported by local business and local agencies.

Strategy 2C: Encourage NDOT to establish US Bicycle Routes and regional bicycle routes in Lyon County, Nevada.

Strategy 2D: Review the County's existing permit process for bicycle events, and if needed, develop a streamlined permitting process that establishes clear rules and guidelines along with acceptable temporary wayfinding methods.

Strategy 2E: Encourage each region/community to develop a free bicycling map/guide highlighting bicycle routes, destinations and services of interest to cyclists.

Strategy 2F: Encourage each region/community to explore the development of "scenic bikeway" routes highlighting the regions scenic and cultural attributes.

Strategy 2G: Encourage each region/community to explore the development of an annual bicycle event to showcase/market their area and culture. This event may be tied to already established events and gatherings.

Strategy 2H: Develop a signage scheme to notify visitors of available trails and cycling destinations and opportunities.

5.3 Objective 3

Accommodate Appropriate Bicycling Facilities on All Roadways in Nevada Open to Bicycling

Strategy 3A: Adopt Countywide design guidelines and specifications that address bicycle facility design, including wayfinding and informational signs, and accommodating bicycle facilities in work zones.

Strategy 3B: Develop protocols with the state and local agencies that review maintenance projects which require restriping, to evaluate redesign options for adding bicycle facilities.

Strategy 3C: Define, inventory, and preserve, as necessary, alternate corridors such as railroad, irrigation easements, utility, and roadway rights-of-way for bicycling.

Strategy 3D: Maintain and evaluate, every two years, a list of high priority bicycle improvement projects.

Strategy 3E: Strengthen requirements for developers to provide the space for a bicycle facility through street design standards. Provide guidance on when developer is to install the bicycle facility and when the developer must provide the space and funding for a future County improvement if it is not appropriate to install the facility at the time of development.

Strategy 3F: Encourage each community to develop a strategy to provide bicycle parking (racks, lockers, etc.) at all key destination points and business districts.

5.4 Objective 4

Increase Motorists' and Bicyclists' Compliance with Laws Associated with Bicycling

Strategy 4A: Encourage bicycle training for youth and adult bicyclists, through County, state, local, and private sector organization partnerships.

Strategy 4B: Provide assistance with state and local bicycle media and safety campaigns, materials, and outreach.

Strategy 4C: Work with the Lyon County Sheriff's Office and state law enforcement agencies to encourage the enforcement of state laws related to bicycling from a motorist's and bicyclist's perspective, regarding unsafe and unlawful behaviors.

Strategy 4D: Encourage a state sponsored Bicycle Infraction Diversion Program that allows violators of bicycling related infractions (motorists and bicyclists) to complete a training course instead of paying a fine.

Strategy 4E: Continue to work with advocates and the state to address legislative issues and needed changes related to bicycling during Nevada's bi-annual legislative sessions.

6. RECOMMENDED BICYCLE FACILITIES

Recommendations within the State Bike Plan are based upon the Vision, Goals and Objectives developed from the review of existing conditions and bicyclists' needs discovered through public input and stakeholder improvement processes.

The Lyon County Bike Plan's primary focus is to document the proposed bicycle infrastructure in Lyon County. The facility recommendations take into account that bicycle accommodation is not a one-size-fits-all approach and that bicycling accommodation should be responsive to the preferences of different bicycling user groups and trip types. The 2012 American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities (2012 AASHTO Bike Guide) defines two user groups based on bicyclist skill and comfort level: Experienced and Confident, and Casual and Less Confident. Characteristics of the two groups are described below:

Experienced and Confident:

- Most comfortable riding with vehicles on streets and are able to navigate streets like a motor vehicle, including using the full width of a narrow travel lane when appropriate and using left-turn lanes
- While comfortable on most streets, some prefer on-street bike lanes, paved shoulders or shared use paths when available
- Ride with the flow of traffic on streets and avoid riding on sidewalks
- Typically ride at speeds of 15 to 25 miles per hour on level grades and can reach up to 45 miles per hour on steep descents

Casual and Less Confident:

- Prefer shared use paths, bicycle boulevards, or bike lanes along low-volume streets
- May have difficulty gauging traffic and may be unfamiliar with rules of the road as they pertain to bicyclists; more likely to walk bike across intersections
- May use less direct route to avoid arterials with heavy traffic volumes
- May ride on sidewalk if no on-street facility is available
- Typically ride around 8 to 12 miles per hour
- Typically cycle shorter distances, one to five miles

Bicyclists generally also have different preferences based on local versus long distance trips. Local trips are often more utilitarian (e.g., biking to a shopping destination or school) and long trips more recreational (e.g., biking for exercise or sport), although there are also short recreation trips and long utilitarian trips. Local trips typically do not go much further beyond the populated area; whereas, long distance trips may be cross-state, touring type trips, or regional trips between destinations.

These trip types are also based on information in the 2012 AASHTO Bike Guide and generally have the following characteristics:

Long-Distance Trips:

- Directness of route not as important as visual interest, shade, and protection from wind
- Loop trips may be preferred to back tracking; start and end points are often the same with an exception being bicycle touring trips
- Trips typically range from under a mile to over 50 miles
- Short term parking is needed at recreational sites, parks, trailheads and other activity centers

- Varied topography may be desired, depending on the fitness and skill level of the bicyclist
- More likely to be riding in a group
- Sometimes drive with bicycle to starting point of ride
- Typically ride on the weekend or on weekday before or after commute hours

Local Trips:

- Directness of route and connected, continuous facilities more important
- Trips generally travel from residential to schools, shopping or work areas
- Trips typically range from 1 to 10 miles in length
- Short-term and long-term bicycle parking is needed at destinations
- Flat topography preferred
- Often ride individually
- Bicycle is primary mode of transportation for the trip; may transfer to public transportation and may not have access to a car for the trip

Table 3 summarizes the preferences of both trip types for the two user groups.

		Experienced/Confident Bicyclists		Casual/Less Confident Bicyclists	
		Long Distance	**Local**	**Long Distance**	**Local**
Facility Type	Bicycle Lane	✓	✓	✓	✓
	Paved Shoulder	✓	✓	✓	✓
	Shared Lanes	✓	✓		
	Marked Shared Lanes		✓		✓
	Shared Use Path			✓	✓

Table 3 – User Group and Trip Types

As displayed in **Table 3**, all of the different facility types are preferred by at least one particular user group for either a local or long distance trip. Therefore, the recommendations of this Plan recognize that all of these different facility types serve a particular purpose and should be considered for particular conditions and in some cases two facilities may be appropriate within the same area or corridor.

6.1 Bicycle Facility Types

The following bicycle facility type terms, descriptions and design standards from the 2012 AASHTO Bike Guide and the National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide will be used for this Plan:

6.1.1 On-street Bicycle Facilities

6.1.1.1 Shared Lane

Bicycles may be operated on all roadways except where prohibited by statute or regulation. Between Exits 43 (Wadsworth) and 48 (Fernley), bicycle use is prohibited along I-80 in Lyon County. Generally speaking, roadways that carry very low volumes of traffic may have traffic typically operating at low speeds (typically 25 mph or less), may be suitable as shared lanes in their present condition. There are two categories of shared lanes for bicycling. Shared lanes where a bicycle and motor vehicle can share side by side, which is generally considered to be 14 or 15 feet or greater. The second category is a shared lane where the lane is too narrow for a motor vehicle and bicycle to share side by side, which is a lane that is less than 14 or 15 feet wide. Various design features can make shared lanes more compatible with bicycling, such as good pavement quality; adequate sight distances; roadway designs that encourage lower speeds; and bicycle-compatible drainage grates, bridge expansion joints, and railroad crossings (2012 AASHTO Bike Guide Section 4.3). **Figure 5** represents an example shared lane facility.

Figure 5 – Shared Lane Facility

6.1.1.2 Marked Shared Lane

In situations where it is desirable to provide a higher level of guidance to bicyclists and motorists, marked shared lanes include the shared-lane marking. On streets with on-street parallel parking, shared-lane markings should be placed at least 11 feet from the face of curb, or edge of the traveled way where there is no curb. Without on-street parallel parking, shared-lane markings should be placed at least four feet from the face of curb, or edge of the traveled way where there is no curb (2012 AASHTO Bike Guide Section 4.4). **Figure 6** represents an example marked shared lane facility.

Figure 6 – Marked Shared Lane Facility

6.1.1.3 Paved Shoulder

Adding or improving paved shoulders can greatly improve bicyclists' accommodation on roadway with higher speeds or traffic volumes as well as benefit motorists, and are most often used on rural roadways. A shoulder with at least five feet is recommended from the face of a guardrail, curb, or other roadside barrier to provide additional operating width, as bicyclists generally shy away from a vertical face. On uncurbed cross sections with no vertical obstructions immediately adjacent to the roadway, paved shoulders should be at least four feet (2012 AASHTO Bike Guide Section 4.5). **Figure 7** represents an example paved shoulder facility.

Figure 7 – Paved Shoulder Facility

6.1.1.4 Bike Lane

A portion of the roadway designated for preferential use by bicyclists. One-way facilities that typically carry bicycle traffic in the same direction as adjacent motor vehicle traffic. Bike lanes are the appropriate and preferred bicycle facilities for thoroughfares in both urban and suburban areas. Under most circumstances the recommended width for bike lanes is five feet. A width of four feet may be used on roadways with no curb and gutter and no on-street parking (2012 AASHTO Bike Guide Section 4.6). **Figure 8** represents an example bike lane facility.

Figure 8 – Bike Lane Facility

6.1.1.5 Buffered Bike Lane

A buffered bike lane is a conventional bike lane paired with a designated buffer space separating the bike lane from the adjacent motor vehicle travel lane and/or parking lane. The design standards for a conventional bike lane apply. The buffer shall be marked with two solid white lines and the interior of the marked buffer shall have diagonal cross hatching or chevron markings if the buffer is three feet in width or wider (NACTO Urban Bikeway Design Guide page 19). **Figure 9** represents an example buffered bike lane facility.

Figure 9 – Buffered Bike Lane Facility

6.1.1.6 Bicycle Boulevard

A bicycle boulevard is a local street or series of continuous street segments that have been modified to function as a through street for bicyclists, while discouraging through automobile travel (2012 AASHTO Bike Guide Section 4.10). A bicycle boulevard incorporates several design elements to accommodate bicyclists. These design elements include, but are not limited to:

- Traffic diverters at key intersections to reduce through motor vehicle traffic while permitting passage for through bicyclists.
- At two-way, stop-controlled intersections, priority assignment that favors the bicycle boulevard, so bicyclists can ride with few interruptions.
- Neighborhood traffic circles and mini-roundabouts at minor intersections that slow motor vehicle traffic but allow bicyclists to maintain momentum.
- Other traffic-calming features to lower motor vehicle speeds where deemed appropriate.

Figure 10 represents an example bicycle boulevard facility.

Figure 10 – Bicycle Boulevard Facility

6.1.2 Off-street Bicycle Facility

6.1.2.1 Shared Use Path

Bikeways that are physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way. Paths are most commonly designed for two-way travel. Shared use paths can be paved or unpaved. A paved surface is generally preferred over un-paved surfaces, however unpaved surface may be appropriate on rural paths or as a temporary measure before funding is available for paving (2012 AASHTO Bike Guide Section 5.1). The usable width and the horizontal clearance for a shared use path are the primary design considerations. The minimum paved width for a two-direction shared use path is 10 feet with a typical range from 10 to 14 feet. A path width of eight feet may be used for a short distance due to a physical constraint (2012 AASHTO Bike Guide Section 5.2). **Figure 11** represents an example shared lane bicycle facility.

Figure 11 – Shared Use Path Facility

6.1.2.2 Side-Path

A shared use path that is adjacent to a roadway. The provision of a side-path is not a substitute for an on street bicycle accommodation. Side-paths can create operational issues, but can function along a highway for short sections, or for longer sections where there are few street and/or driveway crossings. A side path should use the same design as a shared use path (2012 AASHTO Bike Guide Section 5.2.2). **Figure 12** represents an example side-path facility.

Figure 12 – Side-Path Facility

6.2 Bicycle Design Guidance

All bicycle facilities recommended in this Plan should be designed and constructed based on the most current version of the AASHTO Bike Guide, the NACTO Urban Bikeway Design Guide and any applicable NDOT and County design standards. Typical roadway cross sections by facility type can be found in **Appendix D**. In addition to the recommended on-street and off-street bicycle facilities, individual improvement projects should include:

- Signage and marking (See **Appendix E**)
  - Bicycle guide signs and wayfinding
  - Signage to alert motorists to the potential presence of bicyclists in travel lanes where no bicycle lane or adjacent shoulders usable by bicyclists are present and where travel lanes are too narrow for bicyclists and motor vehicles to operate side by side such as:
    - Mountainous areas with limited sight visibility
    - Narrow bridges
    - Narrow lanes (<14 feet wide) without bike lanes or shoulders (less than 4 feet wide usable)

- Bicycle parking at destinations
- Roadway crossings and intersection accommodations (including signal detection)

When changing roadway characteristics result in the narrowing of the roadway and the need for bicyclist to use the full lane, warning signs may be used to alert both bicyclists and motorists. These warning signs may be installed in advance of the area followed by a "Bicycle May Use Full Lane" sign (R4-11). Signs may be repeated at regular intervals when the narrow roadway condition persists for an extended distance. For specific guidance on how and when to use these different signs, found in **Appendix E**, refer to the latest version of the Manual on Uniform Traffic Control Devices.

Schools within Lyon County are a part of the SRTS Program operated by Carson City Health and Human Services. As such, the bicycle facility recommendations took into account SRTS within Lyon County.

6.3 Recommended Bicycle Network

A major purpose for the development of this plan was to document the recommended bicycle network for Lyon County. The recommended bicycle network was developed based on input from the bicycle plan workshop and coordination with Lyon County. As discussed previously, bicycles are permitted on all roadways in Lyon County and bicycles should be accommodated on all roadways in Lyon County. Opportunities for additional bicycle facilities that are not identified in this bicycle plan may develop and should be pursued. The recommended bicycle network identified as part of this Plan is included in the following Figures:

- **Figure 13** – Bicycle Network – Lyon County
- **Figure 14** – Bicycle Network – Fernley (West)
- **Figure 15** – Bicycle Network – Fernley (East)
- **Figure 16** – Bicycle Network – Silver Springs
- **Figure 17** – Bicycle Network – Yerington
- **Figure 18** – Bicycle Network – Wellington/Smith Valley

Improvements to a roadway that has a proposed bicycle facility must provide the recommended bicycle facility. In situations where a short segment of a roadway is being improved and Lyon County prefers to have that portion of the bicycle facility constructed at a later time when a continuous facility can be installed, the adequate space to construct the bicycle facility must be provided at the time of improvement and funding provided to Lyon County for future construction.

It is acknowledged that there may be constraints such as a lack of right-of-way or narrow bridges that make it infeasible to implement the recommended bicycle facilities in specific spot locations. In those situations, and upon approval by Lyon County, engineering judgment should be used to provide the best accommodation of bicycles that is feasible at that time, while maintaining the potential for a future improvement to accommodate the recommended bicycle facility. This may include providing a shared use path or alternative route connection around the constriction. Locations with limited width should include warning signage as was described in the previous subsection.

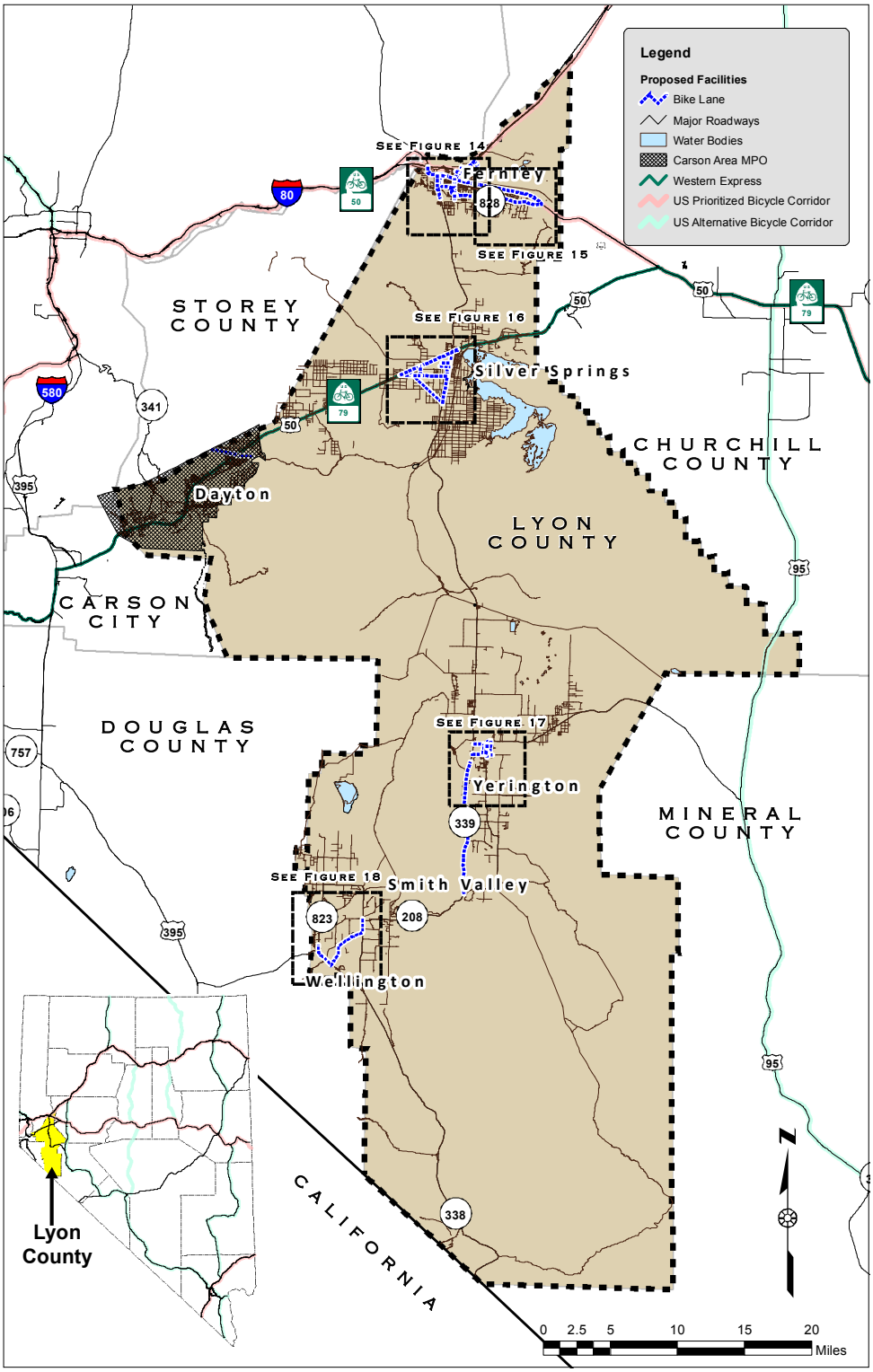


Figure 13 – Bicycle Network – Lyon County

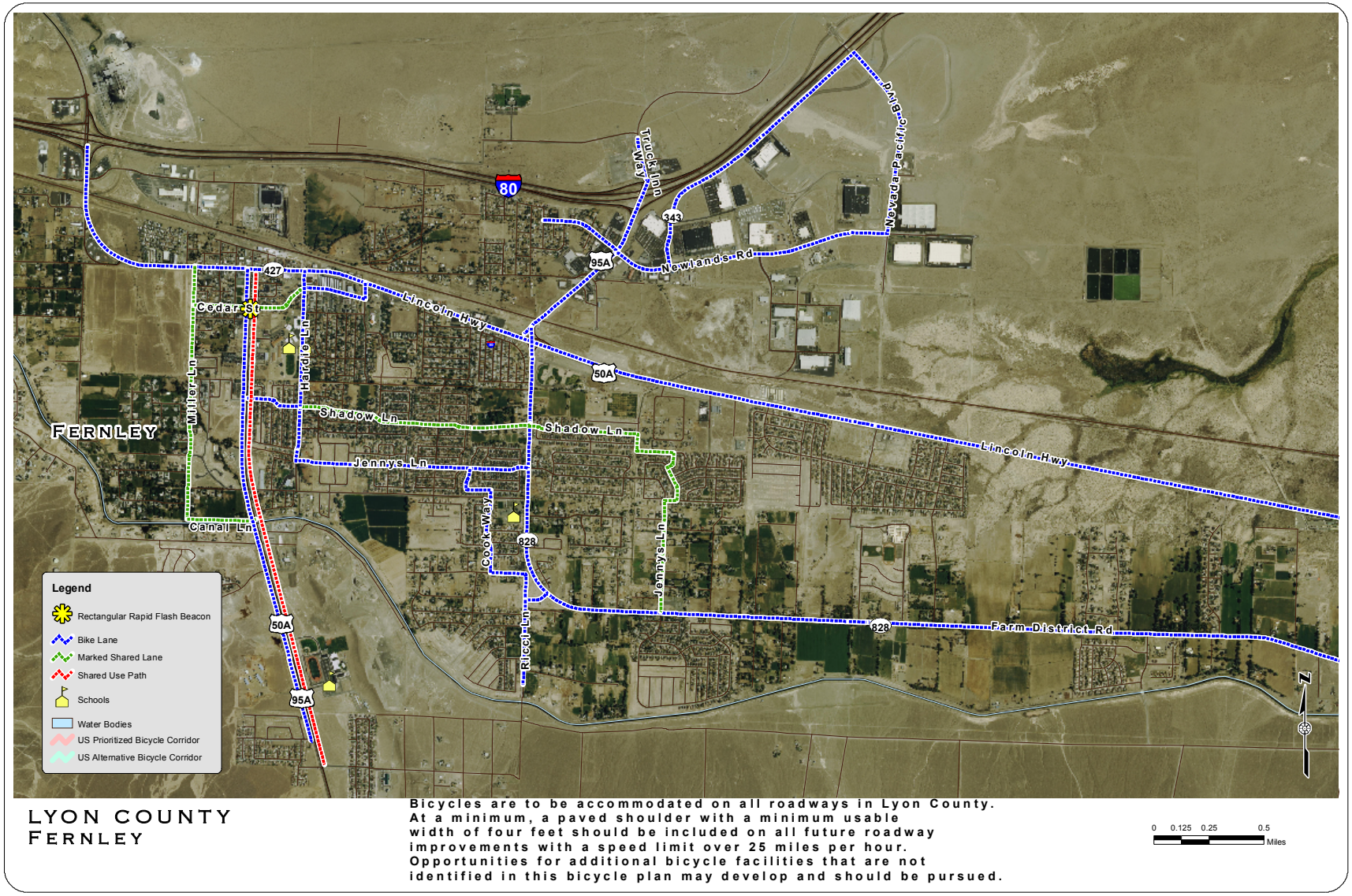


Figure 14 – Bicycle Network – Fernley (West)

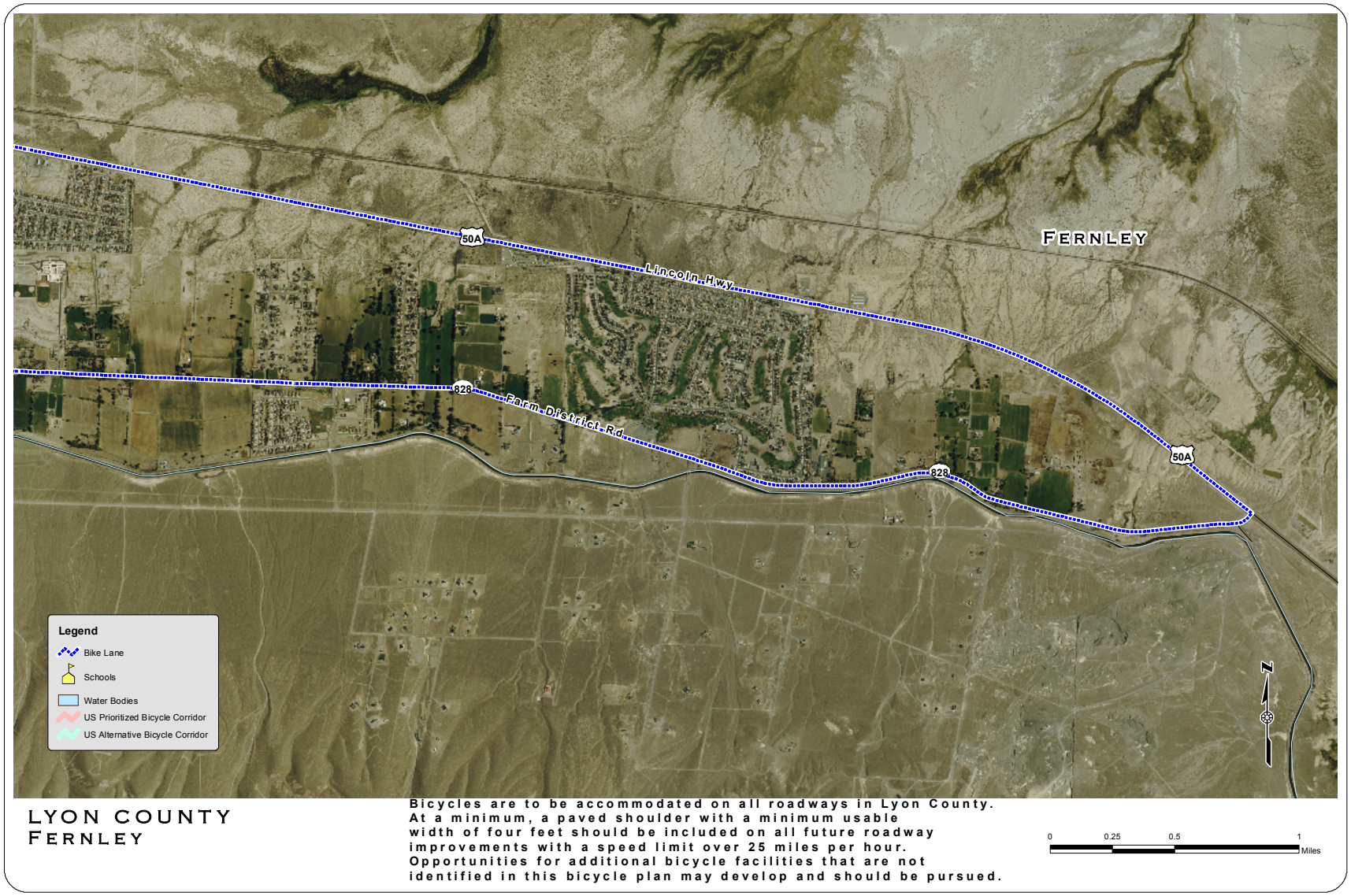
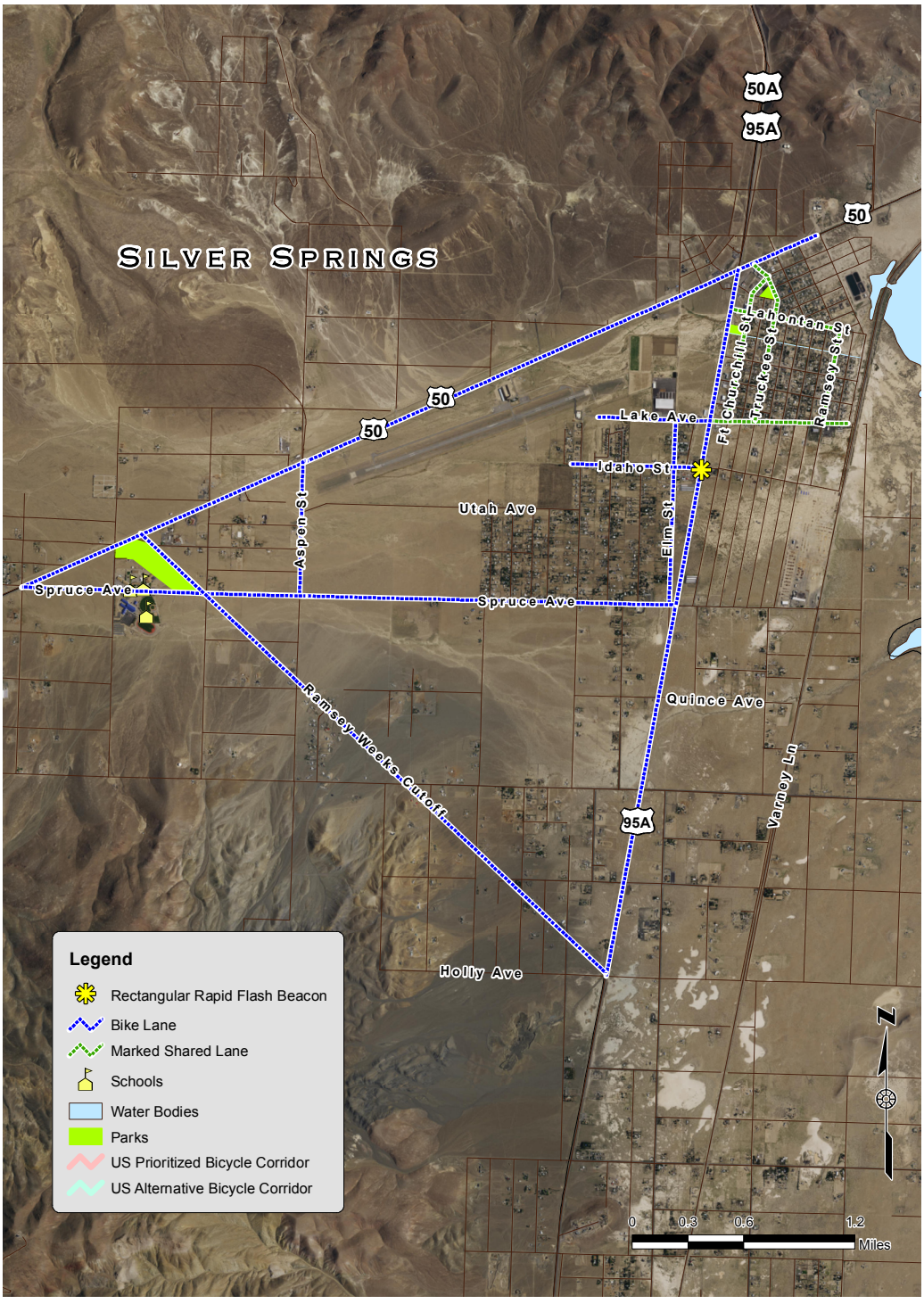

FERNLEY
50A
Lincoln Hwy
828
Farm District Rd
50A
828
Legend
Bike Lane
Schools
Water Bodies
US Prioritized Bicycle Corridor
US Alternative Bicycle Corridor
N
LYON COUNTY
FERNLEY
Bicycles are to be accommodated on all roadways in Lyon County. At a minimum, a paved shoulder with a minimum usable width of four feet should be included on all future roadway improvements with a speed limit over 25 miles per hour. Opportunities for additional bicycle facilities that are not identified in this bicycle plan may develop and should be pursued.
0
0.25
0.5
1
Miles

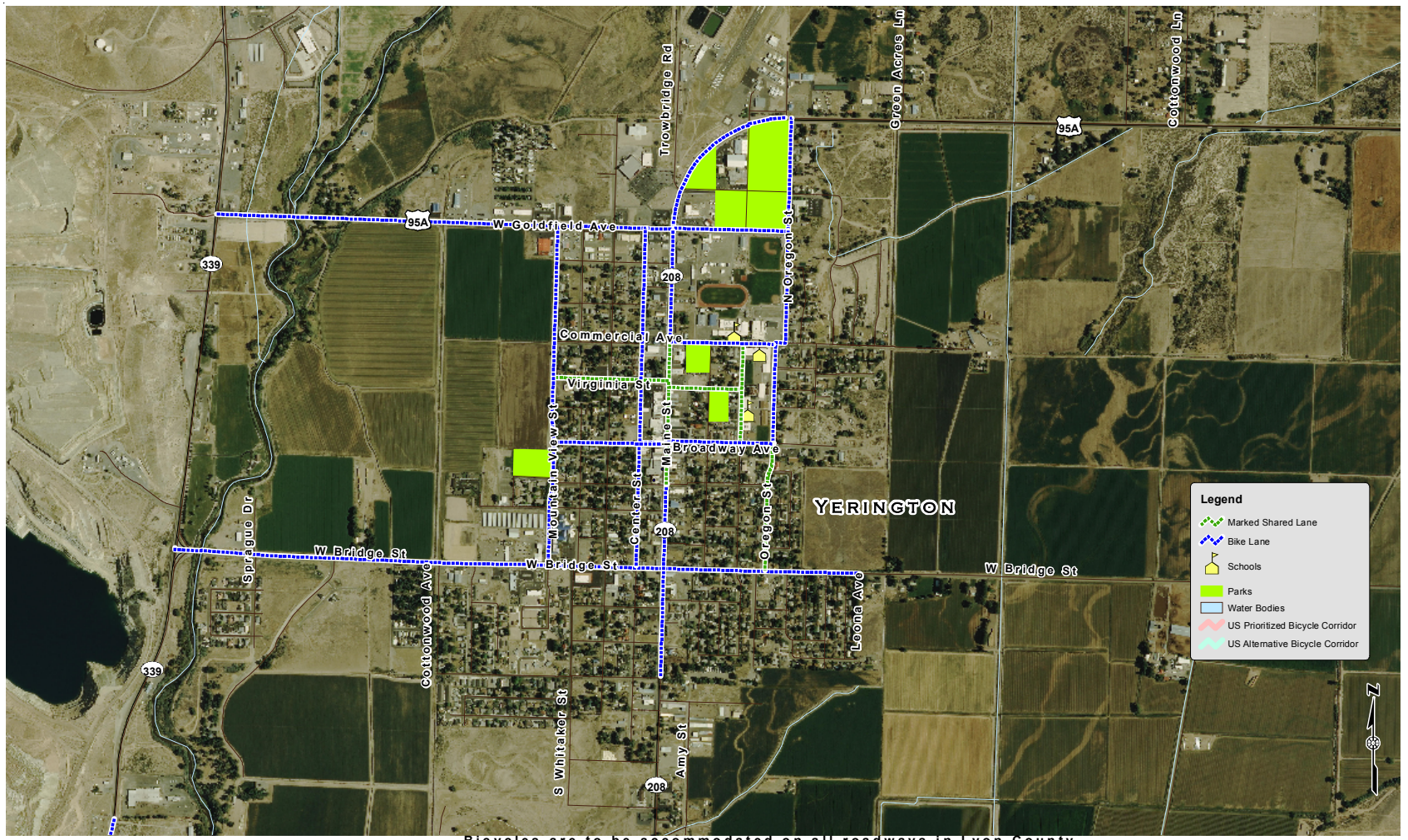
Figure 15 – Bicycle Network – Fernley (East)



LYON COUNTY
SILVER SPRINGS

Bicycles are to be accommodated on all roadways in Lyon County. At a minimum, a paved shoulder with a minimum usable width of four feet should be included on all future roadway improvements with a speed limit over 25 miles per hour. Opportunities for additional bicycle facilities that are not identified in this bicycle plan may develop and should be pursued.

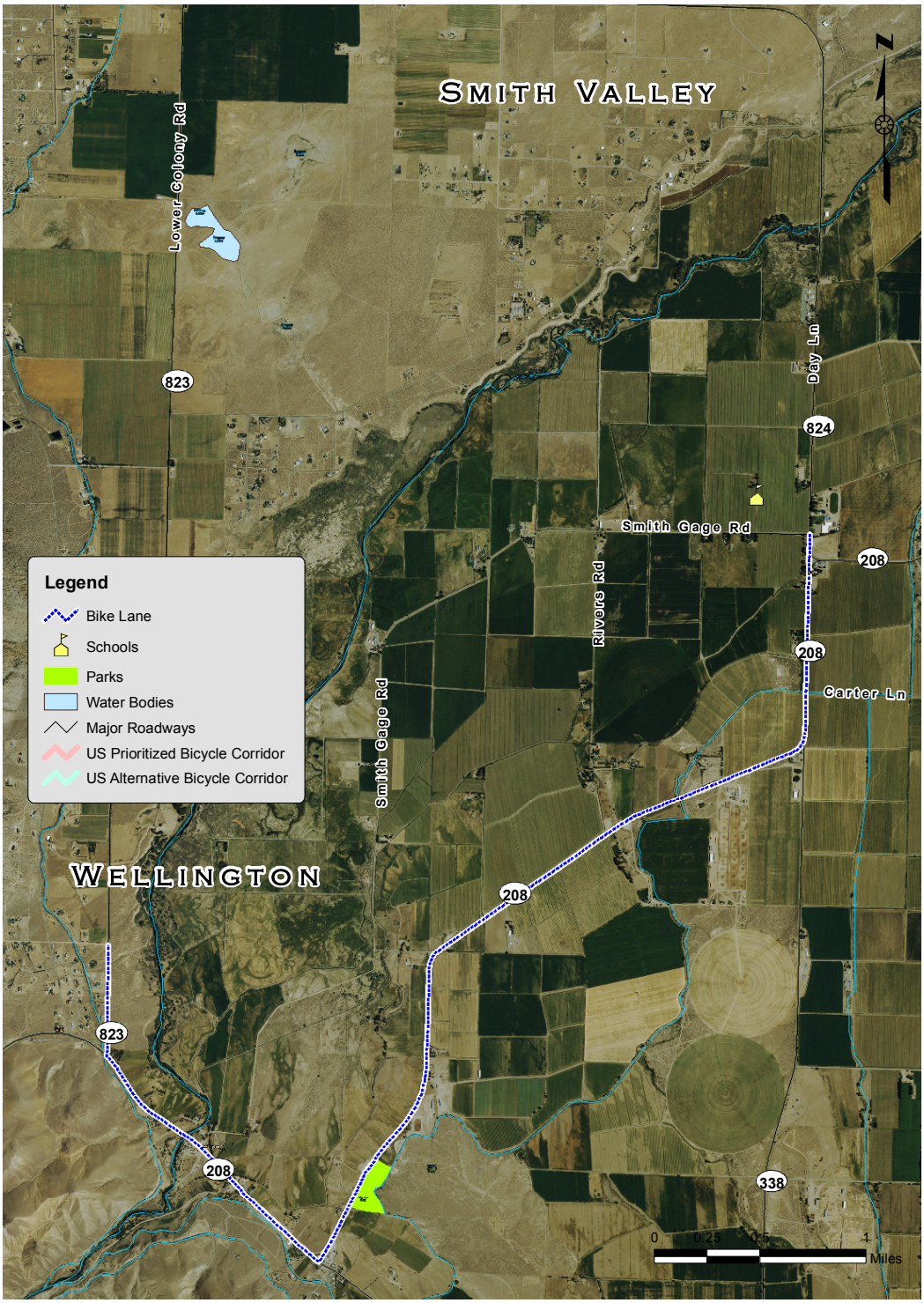
Figure 16 – Bicycle Network – Silver Springs



LYON COUNTY
YERINGTON

Bicycles are to be accommodated on all roadways in Lyon County. At a minimum, a paved shoulder with a minimum usable width of four feet should be included on all future roadway improvements with a speed limit over 25 miles per hour. Opportunities for additional bicycle facilities that are not identified in this bicycle plan may develop and should be pursued.

Figure 17 – Bicycle Network – Yerington



LYON COUNTY
SMITH VALLEY

Bicycles are to be accommodated on all roadways in Lyon County. At a minimum, a paved shoulder with a minimum usable width of four feet should be included on all future roadway improvements with a speed limit over 25 miles per hour. Opportunities for additional bicycle facilities that are not identified in this bicycle plan may develop and should be pursued.

Figure 18 – Bicycle Network – Wellington/Smith Valley

6.4 High Priority Bicycle Improvement Projects

The list below notes high priority bicycle improvement projects identified through the creation of this Plan. The initial project list was developed through the two-day bike plan workshop where input was collected from individuals representing local, regional and state agencies or organizations and a few members of the public who participated in the workshop. High priority bicycle improvement projects include:

- Paved Shoulder: US 50, Entire County
- Bicycle wayfaring signage: US 50, Entire County
- Bicycle Lane: US 50A, Entire Main Street
- Bicycle Lane: US 95A, Main Street to Royal Oaks Drive
- Bicycle Lane: US 95A, US 50 to Ramsey Weeks Cutoff
- Bicycle Lane: US 50, City of Dayton to Ramsey Weeks Cutoff

All bicycle facilities should be designed and constructed based on the most current version of the AASHTO Guide for the Development of Bicycle Facilities, the NACTO Urban Bikeway Design Guide and any applicable NDOT and County design standards.

6.5 US Bicycle Route System

The US Bicycle Route System is an emerging national network of bicycle routes that are of national or regional significance. Routes in the network provide important links to cities, towns, transportation hubs, and scenic, cultural, and historic destinations. They are continuous, crossing state and, maybe in the future, international borders. These routes are on roads and trails and offer facilities that are suitable for bicycle travel. The US Bicycle Route System's 2013 National Corridor Plan (http://www.adventurecycling.org/default/assets/file/USBRS//USBRSCorridorMap.pdf) identifies Prioritized and Alternate Corridors which identify where US Bicycle Routes may develop in the future. Prioritized Corridors designate where bicycle routes will likely develop first and Alternate Corridors, which do not have a designate route number, are anticipated to develop after the Prioritized Corridors. The National Corridor Plan identifies US 50 as a Prioritized Corridor which passes through Lyon County, through Fernley.

6.6 Complete Street Policy

The implementation of a complete street policy should be considered for Lyon County. Below is the policy contained in the State Bike Plan, the cover of the plan and a link to the plan is located in **Appendix A**.

State, regional, and local jurisdictions adopt a policy that all design projects with new roadways or modifications to existing roadways are required to include appropriate bicycle accommodation.

Support: A requirement for bicycle accommodation can come in the form of a bicycle policy or a complete streets policy. As summarized on the national Complete Streets Coalition website (www.completestreets.org):

Instituting a Complete Streets policy ensures that transportation planners and engineers consistently design and operate the entire roadway with all users in mind – including bicyclists, public transportation vehicles and riders, and pedestrians of all ages and abilities.

Complete streets can offer many benefits in all communities, regardless of size or location.

Complete streets make economic sense. A balanced transportation system that includes complete streets can bolster economic growth and stability by providing accessible and efficient connections between residences, schools, parks, public transportation, offices, and retail destinations.

Complete streets improve safety by reducing crashes through safety improvements. One study found that designing for pedestrian travel by installing raised medians and redesigning intersections and sidewalks reduced pedestrian risk by 28 percent (Transportation Research Record 1828, Paper No. 03-3135, pp. 56-66 by Michael R. King, Jon A. Carnegie and Reid Ewing).

Complete streets encourage more walking and bicycling. Public health experts are encouraging walking and bicycling as a response to the obesity epidemic, and complete streets can help. One study found that 43 percent of people with safe places to walk within 10 minutes of home met recommended activity levels, while just 27 percent of those without safe places to walk were active enough (Designing for Active Recreation, Active Living Research, February 2005).

Complete streets can help ease transportation woes. Streets that provide travel choices can give people the option to avoid traffic jams, and increase the overall capacity of the transportation network. Several states, including California, Colorado and Oregon, have adopted complete streets policies as one strategy to increase the overall capacity of their transportation network and reduce congestion.

Complete streets help children. Streets that provide room for bicycling and walking help children get physical activity and gain independence. More children walk to school where there are sidewalks, and children who have and use safe walking and bicycling routes have a more positive view of their neighborhood. Safe Routes to School programs, gaining in popularity across the country, will benefit from complete streets policies that help turn all routes into safe routes.

Complete streets are good for air quality. Poor air quality in our urban areas is linked to increases in asthma and other illnesses. Yet if each resident of an American community of 100,000 replaced one car trip with one bike trip just once a month, it would cut carbon dioxide (CO2) emissions by 3,764 tons per year in the community. Complete streets allow this to happen more easily.

Complete streets make fiscal sense. Integrating sidewalks, bike lanes, transit amenities, and safe crossings into the initial design of a project spares the expense of retrofits later. Jeff Morales, former Director of Caltrans, said, “by fully considering the needs of all non-motorized travelers (pedestrians, bicyclists, and persons with disabilities) early in the life of a project, the costs associated with including facilities for these travelers are minimized.” Residents of participating counties have the option to make a $2 donation as part of their annual vehicle registration to the Complete Streets Program in their county. The funding within participating counties can be made available for retrofitting of roads to benefit pedestrians, bicyclists, disabled persons, and motorists.

Guidance:

The following is guidance on the state level policy based on information from the National Complete Streets Coalition website (www.completestreets.org). Additional guidance is provided on the website.

> The agency shall provide for the needs of motor vehicle drivers, public transportation vehicles and patrons, bicyclists, and pedestrians of all ages and abilities in all planning, programming, design, construction, reconstruction, retrofit, operations, and maintenance activities and products. The agency shall view all transportation improvements as opportunities to improve safety, access, and mobility for all travelers and recognizes bicycle, pedestrian, and transit modes as integral elements of the transportation system.

The website includes additional recommendations on the considerations for addressing specific issues and exceptions.

If adoption of a Complete Streets Policy is not possible, an alternate approach is a Bicycle and Pedestrian Accommodation Policy. The following summarizes U.S. Department of Transportation (USDOT) document "Accommodating Bicycle and Pedestrian Travel: A Recommended Approach (http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/design_guidance/design.cfm#d1):

1. Bicycle and pedestrian ways shall be established in new construction and reconstruction projects in all urbanized areas unless one or more of three conditions are met:
    - Bicyclists and pedestrians are prohibited by law from using the roadway. In this instance, a greater effort may be necessary to accommodate bicyclists and pedestrians elsewhere within the right-of-way or within the same transportation corridor.
    - The cost of establishing bikeways or walkways would be excessively disproportionate to the need or probable use. Excessively disproportionate is defined as exceeding 20 percent of the cost of the larger transportation project.
    - Where population is sparse or other factors indicate an absence of need. For example, the Portland Pedestrian Guide requires "all construction of new public streets" to include sidewalk improvements on both sides, unless the street is a cul-de-sac with four or fewer dwellings or the street has severe topographic or natural resource constraints.
2. In rural areas, paved shoulders should be included in all new construction and reconstruction projects on roadways used by more than 1,000 vehicles per day, as in states such as Wisconsin. Paved shoulders have safety and operational advantages for all road users in addition to providing a place for bicyclists and pedestrians to operate.

   Rumble strips are not recommended where shoulders are used by bicyclists unless there is a minimum clear path of four feet in which a bicycle may safely operate and there is a 12-foot longitudinal gap in the rumble strip every 60 feet.
3. Sidewalks, shared use paths, street crossings (including over- and undercrossings), pedestrian signals, signs, street furniture, transit stops and facilities, and all connecting pathways shall be designed, constructed, operated, and maintained so that all pedestrians, including people with disabilities, can travel safely and independently.
4. The design and development of the transportation infrastructure shall improve conditions for bicycling and walking through the following additional steps:
    - Planning projects for the long-term. Transportation facilities are long-term investments that remain in place for many years. The design and construction of new facilities that meet the criteria in item 1 above should anticipate likely future demand for bicycling and walking facilities and not preclude the provision of future improvements. For example, a bridge that is likely to remain in place for 50 years, might be built with sufficient width for safe bicycle and pedestrian use in anticipation that facilities will be available at either end of the bridge even if that is not currently the case
    - Addressing the need for bicyclists and pedestrians to cross corridors as well as travel along them. Even where bicyclists and pedestrians may not commonly use a particular travel corridor that is being improved or constructed, they will likely need to be able to cross that corridor safely and conveniently. Therefore, the design of intersections and interchanges shall accommodate bicyclists and pedestrians in a manner that is safe, accessible, and convenient.
    - Getting exceptions approved at a senior level. Exceptions for the non-inclusion of bikeways and walkways shall be approved by a senior manager and be documented with supporting data that indicates the basis for the decision.
    - Designing facilities to the best currently available standards and guidelines. The design of facilities for bicyclists and pedestrians should follow design guidelines and standards that are commonly used, such as the 2012 AASHTO Bike Guide, AASHTO's A Policy on Geometric

Design of Highways and Streets, and the ITE Recommended Practice "Design and Safety of Pedestrian Facilities".

7. FUNDING

Funding bicycling improvements can come from federal, state, and local sources. At the state level, plan recommendations may be implemented by incorporating bicycle infrastructure local improvements into NDOT's Statewide Transportation Improvement Program (STIP). Localities may take similar actions by dedicating staff and budget resources to support bicycle planning and programs (e.g., education, encouragement, and enforcement), incorporating bicycle improvements into capital improvement programs, and routinely accommodating bicycle facilities when making major roadway improvements.

The most recent federal transportation bill passed is the Fixing America's Surface Transportation (FAST) Act, which was signed into law in December 2015. The FAST Act slightly improves funding compared to MAP-21 and provides $305 billion for surface transportation projects over the next five years. A significant benefit of the FAST Act is that it creates a long-term funding source that agencies can count on. The FAST Act includes an increase in funding for bicycling and makes nonprofits eligible for that funding. The bill also creates a new safety education program and includes complete streets language. The safety education program covered by the FAST Act include education of law enforcement, motorist, drivers, bicycle and pedestrians, and enforcement campaign implementation. Through these programs, the FAST Act aims to provide a priority safety fund to reduce bicycle and pedestrian fatalities. States in which overall fatalities include 15 percent or more of bicyclists or pedestrians will receive the education funding from the FAST Act. The establishment of complete street design standards by states and MPOs are encouraged through this Act.

Federal transportation funding is an important source of funding for states and localities. The FAST Act moved the stand alone Transportation Alternatives Program (TAP) to be a set aside in the larger Surface Transportation Block Grant Program. The TAP is one component of the total federal transportation funding apportionment that states receive. Other programs that are part of the federal apportionment to states, and which could be important for supporting this Plan's recommendations, include the National Highway Performance Program, the Surface Transportation Program (STP), and the Highway Safety Improvement Program (HSIP). The Section 402 State and Community Highway Safety Grant Program is another potential source of funding for certain types of projects that may benefit bicyclists. The following are details for each of these funding sources.

7.1 Transportation Alternatives Program (TAP)

The TAP includes the same components from MAP-21, which were previously Transportation Enhancements, Safe Routes to School and the Recreational Trails Program. State DOTs are to distribute 50% of TA funding to defined Transportation Management Areas, which consist of cities or metro areas with populations greater than 200,000. TMAs (Regional Transportation Commissions in Nevada and often Metropolitan Planning Organizations) are required to distribute these funds through a competitive grant process. The other 50% of funds are distributed directly by state DOTs through a competitive grant process with no sub-allocation of funding by population.

7.1.1 Eligible Activities for Transportation Alternatives

The following activities that were previously eligible for funding under MAP-21 are still believed to be eligible under the FAST Act with TAP:

- Construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other nonmotorized forms of transportation, including sidewalks, bicycle infrastructure, pedestrian and bicycle signals, traffic calming techniques, lighting and other safety-related infrastructure, and transportation projects to achieve compliance with the Americans with Disabilities Act of 1990.

- Construction, planning, and design of infrastructure-related projects and systems that will provide safe routes for non-drivers, including children, older adults, and individuals with disabilities to access daily needs.
- Conversion and use of abandoned railroad corridors for trails for pedestrians, bicyclists, or other nonmotorized transportation users.
- Construction of turnouts, overlooks, and viewing areas.
- Inventory, control, or removal of outdoor advertising.
- Historic preservation and rehabilitation of historic transportation facilities.
- Vegetation management practices in transportation rights-of-way to improve roadway safety, prevent against invasive species, and provide erosion control.
- Archaeological activities relating to impacts from implementation of a transportation project eligible under this title.
- Any environmental mitigation activity, including pollution prevention and pollution abatement activities and mitigation to address stormwater management, control, and water pollution prevention or abatement related to highway construction or due to highway runoff, including activities described in sections 133(b)(11), 328(a), and 329; or reduce vehicle-caused wildlife mortality or to restore and maintain connectivity among terrestrial or aquatic habitats.

In addition to the eligibilities listed above, eligible Transportation Alternatives projects also include any projects eligible under the Recreational Trails Program and Safe Routes to School Program (SRTS). Law enforcement activities within 2 miles of a K-8 school remain eligible for funding as SRTS projects.

Eligible Transportation Alternatives projects also include the "planning, designing, or constructing boulevards and other roadways largely in the right-of-way of former Interstate System routes or other divided highways.

The Transportation Alternatives program is a part of the Federal-aid Highway Program. Although the program is a "grant" program under Federal regulation, it is not an "up-front" grant program and funds are available only on a reimbursement basis. Only after a project has been approved by the State Department of Transportation or Metropolitan Planning Organization and the FHWA division office can costs become eligible for reimbursement. This means project sponsors must incur the cost of the project prior to being repaid. Costs must be incurred after FHWA division office project approval or they are not eligible for reimbursement.

7.1.2 Relevance of Federal Funding to the Lyon County Bicycle Plan

FAST Act's TAs may be instrumental in funding bicycling improvements in areas with a population less than 200,000, such as Lyon County. For areas with populations less than 200,000, the FAST Act directs state DOTs to administer a competitive grant process.

7.2 Surface Transportation Program (STP)

The Surface Transportation Program provides flexible funding that may be used by States and localities for projects on any Federal-aid highway, including the National Highway System (NHS), bridge projects on any public road, transit capital projects, and intracity and intercity bus terminals and facilities. Among the eligible activities under STP are projects relating to intersections that: have disproportionately high crash rates; have high congestion; and are located on a Federal-aid highway.

7.3 Highway Safety Improvement Program (HSIP)

The HSIP emphasizes a data-driven, strategic approach to improving highway safety that focuses on results. A highway safety improvement project corrects or improves a hazardous road location, or addresses a highway

safety problem. Funds may be used for projects on any public road or publicly owned bicycle and pedestrian pathway or trail.

7.4 State and Community Highway Safety Grant Program

Highway Safety Funds are used to support State and Community programs to reduce deaths and injuries on the highways. In each State, funds are administered by the Governor's Representative for Highway Safety. Pedestrian Safety has been identified as a National Priority Area and is therefore eligible for Section 402 funds. Section 402 funds can be used for a variety of safety initiatives including conducting data analyses, developing safety education programs, and conducting community-wide pedestrian safety campaigns. Since the Section 402 Program is jointly administered by NHTSA and FHWA, Highway Safety Funds can also be used for some limited safety-related engineering projects. A State is eligible for these formula grants by submitting a Performance Plan, which establishes goals and performance measures to improve highway safety in the State, and a Highway Safety Plan, which describes activities to achieve those goals.

Additional information is available from the following web sites:

- NHTSA Highway Safety Grant Programs
  - http://www.nhtsa.gov/About+NHTSA/Highway+Safety+Grant+Programs http://www.nhtsa.gov/
- Uniform Guidelines for State Highway Safety Programs
  - http://www.nhtsa.gov/nhtsa/whatsup/tea21/tea21programs/

7.5 National Highway Performance Program

The NHPP provides support for the condition and performance of the NHS, for the construction of new facilities on the NHS, and to ensure that investments of Federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets established in a State's asset management plan for the NHS.

NHPP projects must be on an eligible facility and support progress toward achievement of national performance goals for improving infrastructure condition, safety, mobility, or freight movement on the NHS, and be consistent with Metropolitan and Statewide planning requirements. Eligible activities include:

- Construction, reconstruction, resurfacing, restoration, rehabilitation, preservation, or operational improvements of NHS segments.
- Construction, replacement (including replacement with fill material), rehabilitation, preservation, and protection (including scour countermeasures, seismic retrofits, impact protection measures, security countermeasures, and protection against extreme events) of NHS bridges and tunnels.
- Bridge and tunnel inspection and evaluation on the NHS and inspection and evaluation of other NHS highway infrastructure assets.
- Training of bridge and tunnel inspectors.

APPENDIX A

NEVADA STATEWIDE BICYCLE PLAN

NEVADA DEPARTMENT OF TRANSPORTATION

A copy of this plan is available at
www.bicyclenevada.com

NEVADA STATEWIDE BICYCLE PLAN

Prepared by Kimley-Horn and Associates, Inc.

FEBRUARY 2013

APPENDIX B

NOTES FROM COUNTYWIDE OBSERVATIONS

	EXISTING							PROPOSED		
ID	STREET NAME	FROM	TO	ONEWAY	NUMBER LANES	MEDIAN	WIDTH	RECOMMENDED FACILITY	RECOMMENDED ACTION	CROSS SECTION WIDTH
1	Fort Churchill Rd	Hwy 50	Riverpark Parkway	N	2	NONE	varies	BL		varies
2	Fort Churchill Rd	Smokey	Silver Springs	N	2	NONE	varies	NAC	NAC	varies
3	6 Mile Rd	Hwy 50	County Line	N	2	NONE	22'-24'	SRD	NAC (sign)	22'-24'
4	Ramsey Weeks Cutoff	Hwy 50	US 95 A	N	2	NONE	26'	PS	WS	30'
5	Fort Churchill Rd	Truckee	Lake	N	2	NONE	25'	SRD	NAC	25'
6	95 A	Hwy 50	South	N	2	NONE	32'	PS	WS	36'
7	Goldfield Ave	Main Street	West End Town	N	2	NONE	42'	NAC	NAC	42'
8	Main St	Virginia St	Goldfield Ave	N	2	NONE	52'	NAC	NAC	52'
9	Broadway	Mountain View	Oregon St	N	2	NONE	32'	SRD	NAC	32'
10	Nevada St	Bridge St	Pearl St	N	2	NONE	34'	SRD	NAC	34'
11	Pearl St	Main St	Oregon St	N	2	NONE	38'	BL	ASM	38'
12	Oregon St	Pearl St	Bridge St	N	2	NONE	40'	BL/SH	ASM	40'
13	Oregon St	Pearl St	US 95 A	N	2	NONE	32'	BL	ASM	32'
14	Center St	Goldfield Ave.	Bridge St	N	2	NONE	36'	BL	ASM	36'
15	Bridge St	Leona Ave	339	N	2	NONE	34'	PS	NAC / Signing	34'
16	339	95 A	208	N	2	NONE	26'	PS	WS	36'
17	208	East End		N	2	NONE	26'	PS	WS	36'
18	824	208	North End	N	2	NONE	24'	SRD	NAC / Signing	24'
19	338	208	County Line	N	2	NONE	26'	PS	WS	36'
20	95 A	Main Street	County Line	N	2	NONE	36'	PS	NAC	36'
21	Hardie	Cottonwood	Sunshine	N	2	NONE	40'	BL	NAC	40'
22	Hardie	Sunshine	Shadow	N	2	NONE	22'	SRD	NAC / Signing	22'
23	Hardie	Shadow		N	2	NONE	28'	BL	NAC	28'
24	Shadow			N	2	NONE	40'	BL	ASM	40'
25	Spruce	Hwy 50	Ramsey Weeks	N	2	NONE	26'	SRD	NAC / Signing	26'
26	Elm	Lake	Spruce	N	2	NONE	24'	SRD	NAC / Signing	24'
27	Lake Ave.	Fort Churchill Road	Elm	N	2	NONE	26'	SH	ASM	26'
28	W. Fir			N	2	NONE	22'	NAC	NAC	22'
29	Fort Churchill Road	95 A	50	N	2	NONE	varies	NAC	NAC	varies
30	Goldfield	95A	West End Town	N	2	NONE	32'	BL	ASM	32'

LEGEND

FACILITY CODE
SRD - Shared Roadway
SH - Sharrow (Shared Lane Marking)
PS - Paved Shoulder
BL - Bike Lane
BFBL (1) - Buffered Bike Lan (BL & Travel Lane)
BFBL (2) - Buffered Bike Lane (BL & Parked Car)
SUP - Shared Used Path
SWBP - Sidewalk w/ Bike Permitted
S - Further Study Needed
CT1-1 - Cycle Track (1side 1way)
CT2-1 - Cycle Track (2sides 1 way)
CT2-2W - Cycle Track (2 way operation)
BBlvd - Bicycle Boulevard
CFBL - Contra-Flow Bike Lane
CL - Climbing Lane & Sharrow
WOL - Wide Outside Lane
B/BL - Bus/Bike Lane
PHB/BL - Peak Hour Bus/Bike Lane

Action Code
NAC - No Action Needed
ASM - Add Striping/Marking
LD - Lane Diet
RD - Road Diet
RP1 - Remove Parking 1 Side
RP2 - Remove Parking 2 Sides
FTP1 - Add Full Time Parking 1 Side
FTP2 - Add Full Time Parking 2 Sides
WS - Widen Street
WSw - Widen Sidewalk
CFD - Construct Bike Facility w/ Future Development
S - Further Study Needed
MC - Move Center Line
RhExB - Rehabilitate Existing Bike Fac.
PShdr - Pave Existing Shoulder
RECON - Reconstruct Roadway
W- Wayfinding
RS- Restripe

APPENDIX C

NEVADA STATEWIDE BICYCLE PLAN LEGISLATION

4.3.9 *Legislation*

The Nevada Revised Statutes (NRS) contains legislation pertaining to the use of bicycles. The following is a summary of current laws.

NRS 484A.025 includes a definition of a bicycle as "a device propelled by human power upon which a person may ride, having two tandem wheels either of which is over 14 inches in diameter, or every such device generally recognized as a bicycle though equipped with two front or two rear wheels except a moped." In addition, most legislation also pertains to the use of an electric bicycle, which has been defined in NRS 484B.017 as "a device upon which a person may ride, having two or three wheels, or every such device generally recognized as a bicycle that has fully operable pedals and is propelled by a small electric engine which produces not more than 1 gross brake horsepower and which produces not more than 750 watts final output." NRS 408.579 includes legislation that permits electric bicycles to be used on trails and walkways that are intended for bicycles.

According to items within NRS 408 and NRS 484B, the Nevada Department of Transportation shall:

- Consider bicycle lanes and routes, facilities, signs, and turnouts into their designs (408.321);
- Develop a bicycle and pedestrian safety education program (408.228);
- Provide support services to the Nevada Bicycle and Pedestrian Safety Advisory Board (408.577); and
- Have the authority to prohibit the use of bicycles on controlled-access highways or require a permit (484B.593).

According to NRS 408.321, the Nevada Bicycle and Pedestrian Safety Advisory Board shall:

(a) At its first meeting and annually thereafter, elect a Chair from among its members.
(b) Meet regularly at least once each calendar quarter and may meet at other times upon the call of the Chair.
(c) Promote programs and facilities for the safe use of bicycles and pedestrian safety in this State.
(d) Advise appropriate agencies of the State on policies, programs and facilities for the safe use of bicycles and pedestrian safety.

Relating to the responsibilities of an individual operating a bicycle or electric bicycle, NRS has defined that users shall:

- Be subject to the duties applicable to those driving a motor vehicle, except for an individual operating while on duty, including a peace officer, firefighter, emergency medical technician, or employee of a pedestrian mall (NRS 484B.777);
- Use hand signals when appropriate (484B.769);
- Ride upon an attached seat with no more persons than intended by design (NRS 484B.770);
- Ride as near to the right side of the roadway as practical when appropriate (NRS 484B.777); and
- Utilize a headlamp and red rear reflectors when operating at night (NRS 484B.783).

In addition, an operator of a bicycle or electric bicycle shall not:

- Attach themselves to a motor vehicle (NRS 484B.773);
- Carry an article that prevents them from using at least one hand (NRS 484B.780); and
- Intentionally interfere with the movement of a motor vehicle (NRS 484.324).

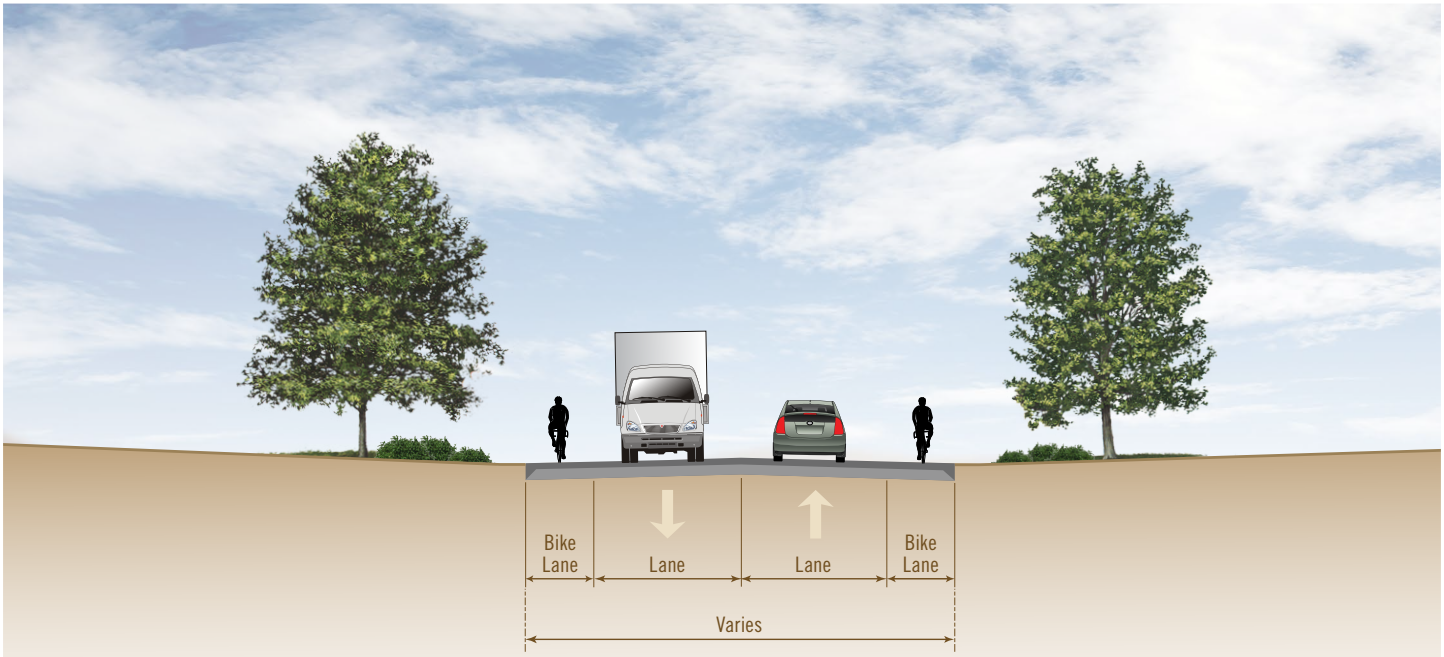
Relating to the responsibilities of an individual operating a motor vehicle, NRS 484B.270 has defined that users shall:

- Not intentionally interfere with an individual operating a bicycle or electric bicycle, and utilize due care. This includes moving to the lane to the immediate left if possible when passing. If this is not possible, no less than 3 feet should be provided;
- Yield to bicycles and electric bicycles riding on a pathway or lane; and
- Be subject to additional penalty if found to be at fault for a collision.

NRS 455 contains legislation relating to skate parks. Relating to bicyclists utilizing these facilities, NRS 455B.290 states that a person shall not use a skate park to ride a bicycle while under the influence of a controlled substance. In addition, NRS 205.2741 includes language making it illegal to willfully damage a bicycle, making the offense subject to a penalty no less than a misdemeanor.

APPENDIX D

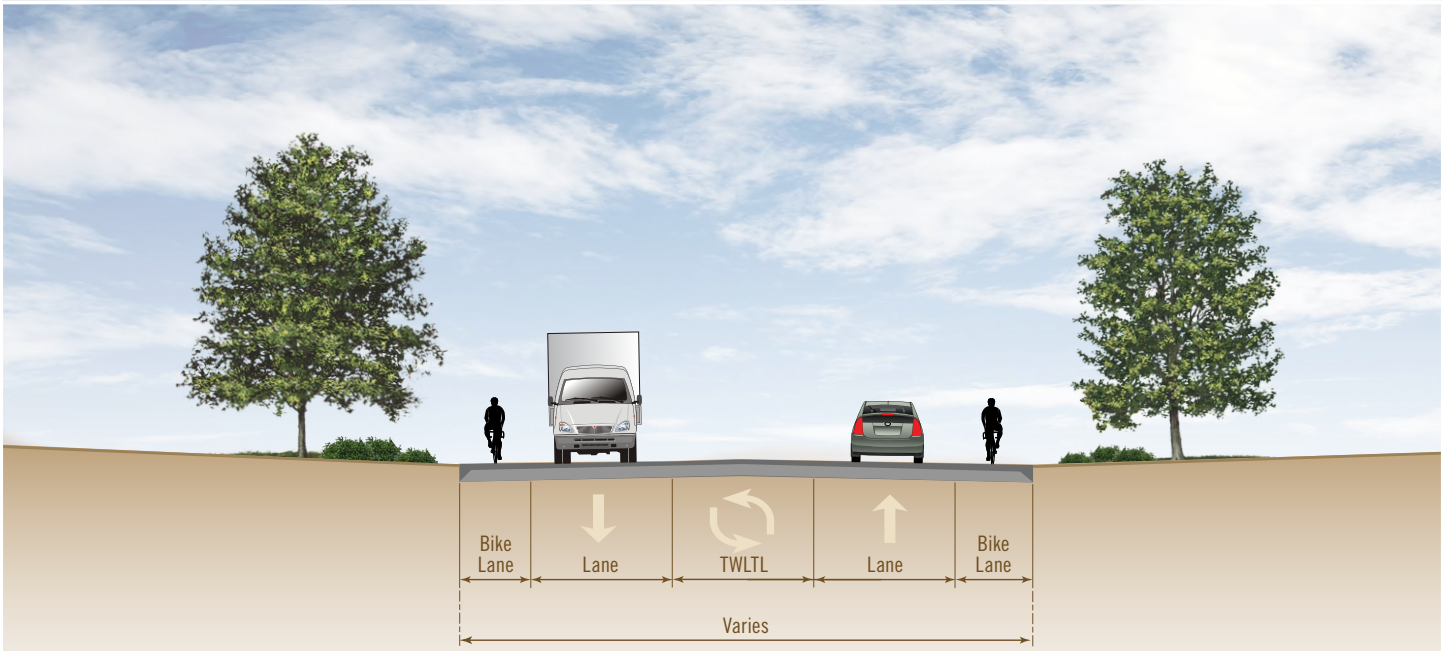
ROADWAY CROSS SECTIONS



Two Lanes Each Direction with Bike Lane

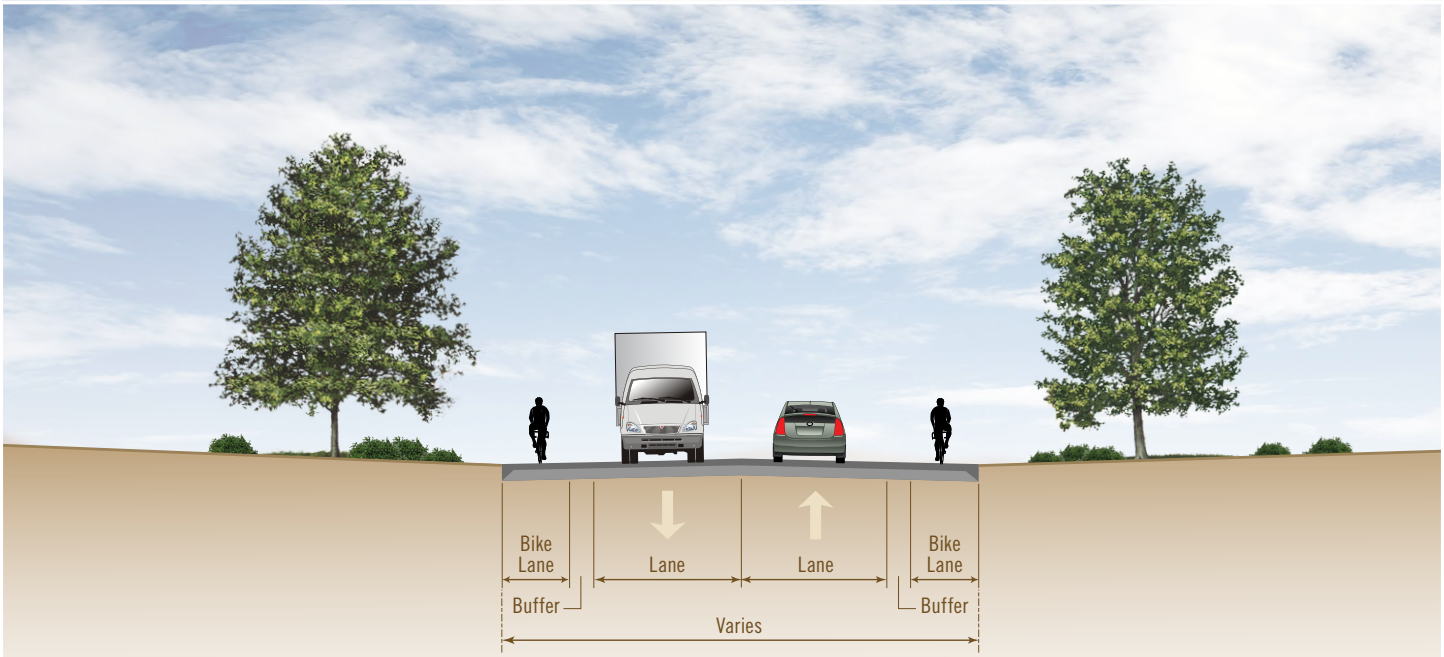
Travel Lane: 10'-12'*
Bike Lane: 4'-6'* (2012 AASHTO Bike Guide Section 4.6)

*Twelve foot lanes and six foot shoulders (36' cross sections) preferred for high speed rural highways. Narrower cross section may be appropriate on lower speed and/or lower volume roadways.



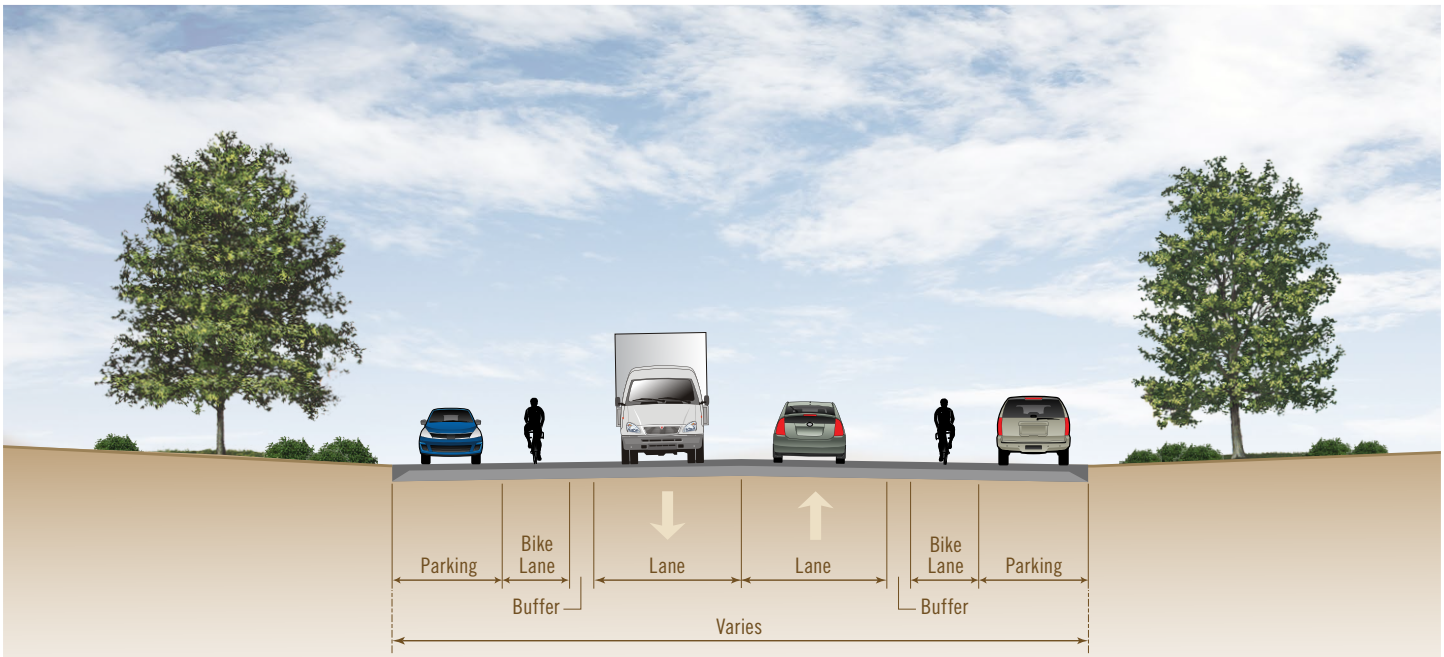
Two Lanes Each Direction with TWLTL and Bike Lane

Travel Lane: 10'-12'
TWLTL: 12'-14'
Bike Lane: 4'-6' (2012 AASHTO Bike Guide Section 4.6)



Buffered Bike Lane

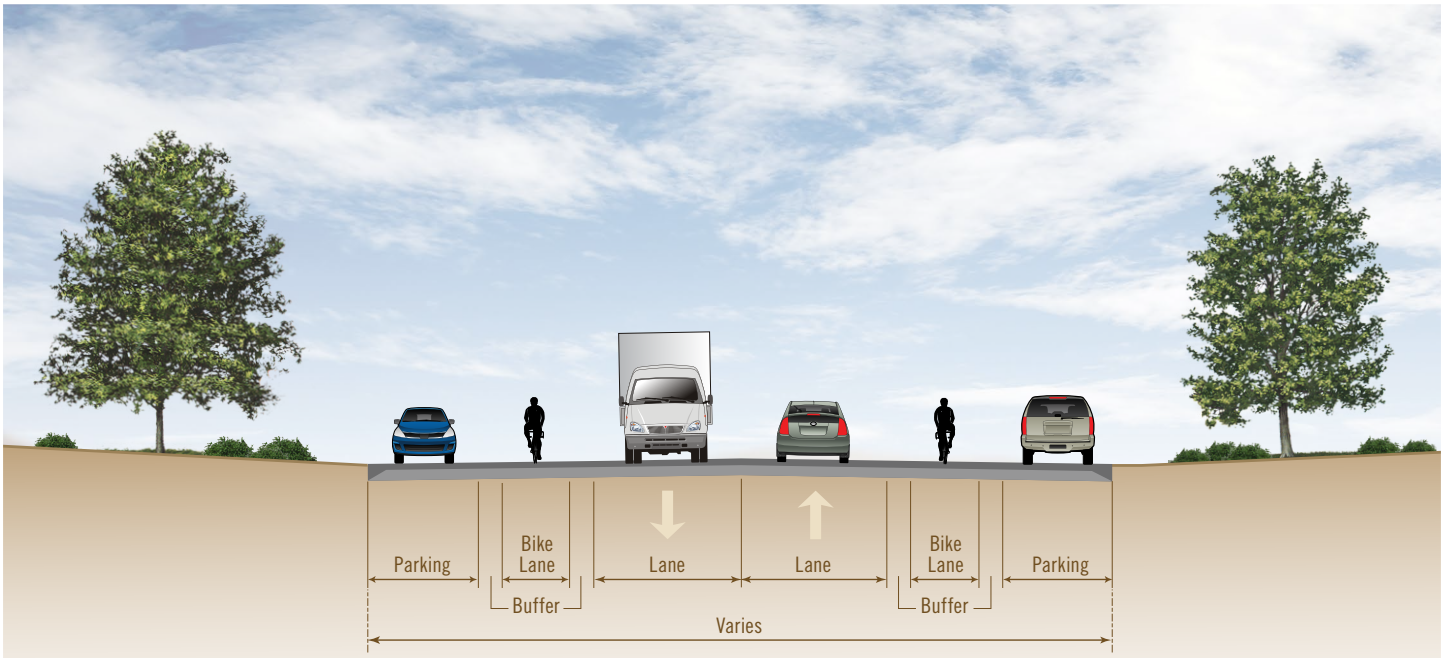
Travel Lane: 10'-12'
Buffer: 2'-3' (NACTO Urban Bikeway Design Guide)
Bike Lane: 4'-6' (2012 AASHTO Bike Guide Section 4.6)



Buffered Bike Lane with Parking

Travel Lane: 10'-12'
Buffer: 2'-3'* (NACTO Urban Bikeway Design Guide)
Bike Lane: 4'-6'* (2012 AASHTO Bike Guide Section 4.6)
Parking: 9'-12'

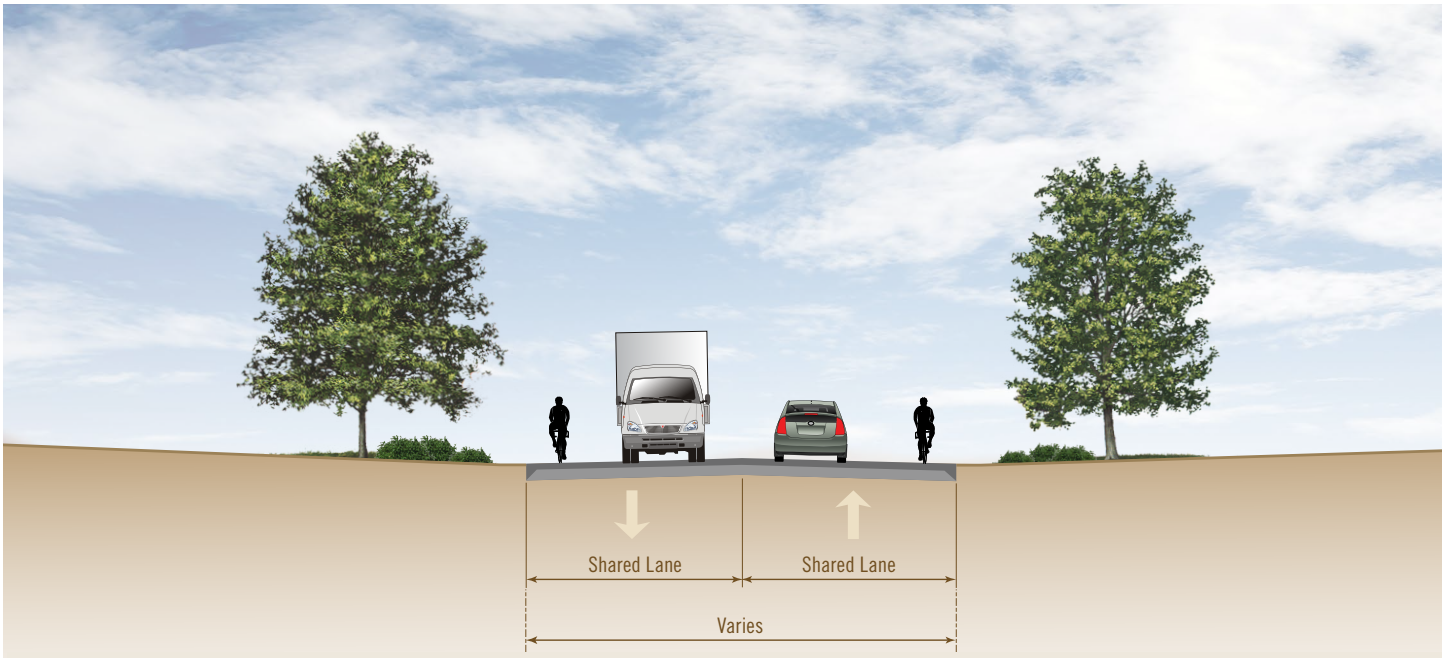
*When on-street parking is present a minimum of 5' is needed for a bike lane if no buffer is provided.



Double Buffered Bike Lane with Parking

Travel Lane: 10'-12'
Buffer: 2'-3'* (NACTO Urban Bikeway Design Guide)
Bike Lane: 4'-6'* (2012 AASHTO Bike Guide Section 4.6)
Buffer: 2'-3'
Parking: 9'-12'

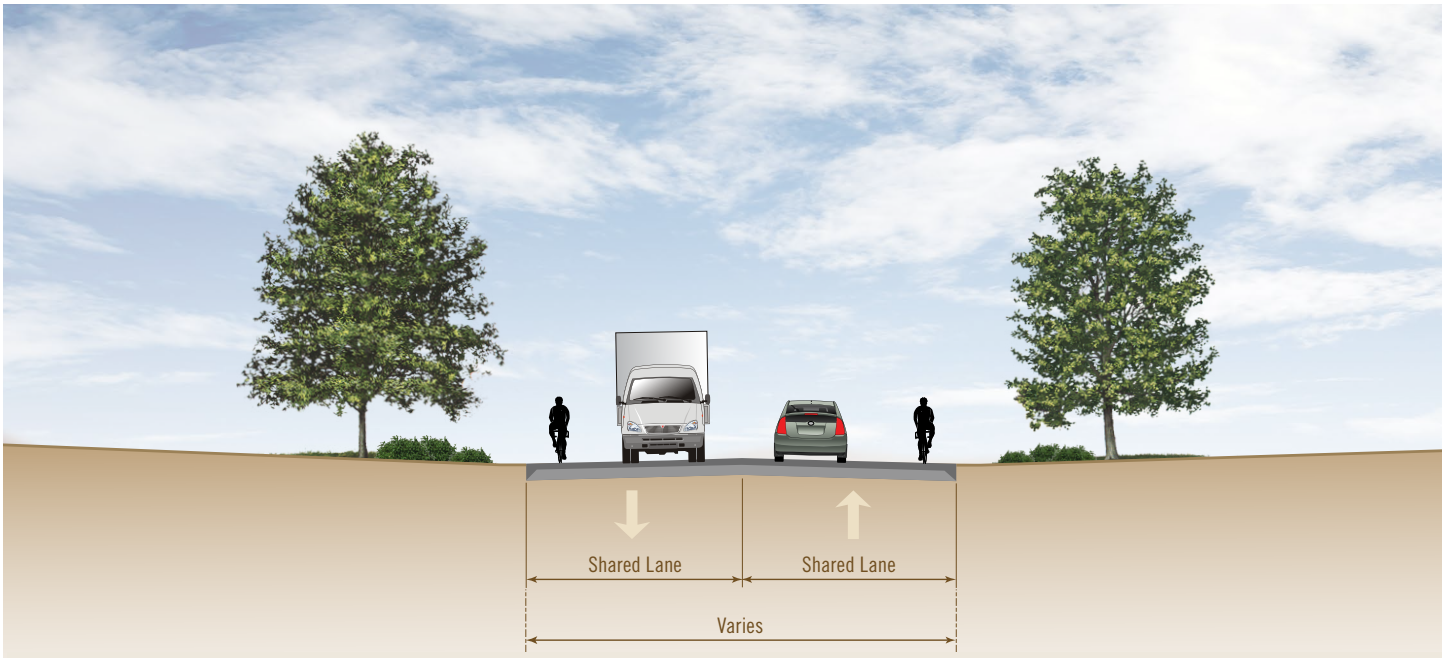
*When on-street parking is present a minimum of 5' is needed for a bike lane if no buffer is provided.



Shared Lane (14’ Wide or Greater)

Shared Lane* (2012 AASHTO Bike Guide Section 4.6)

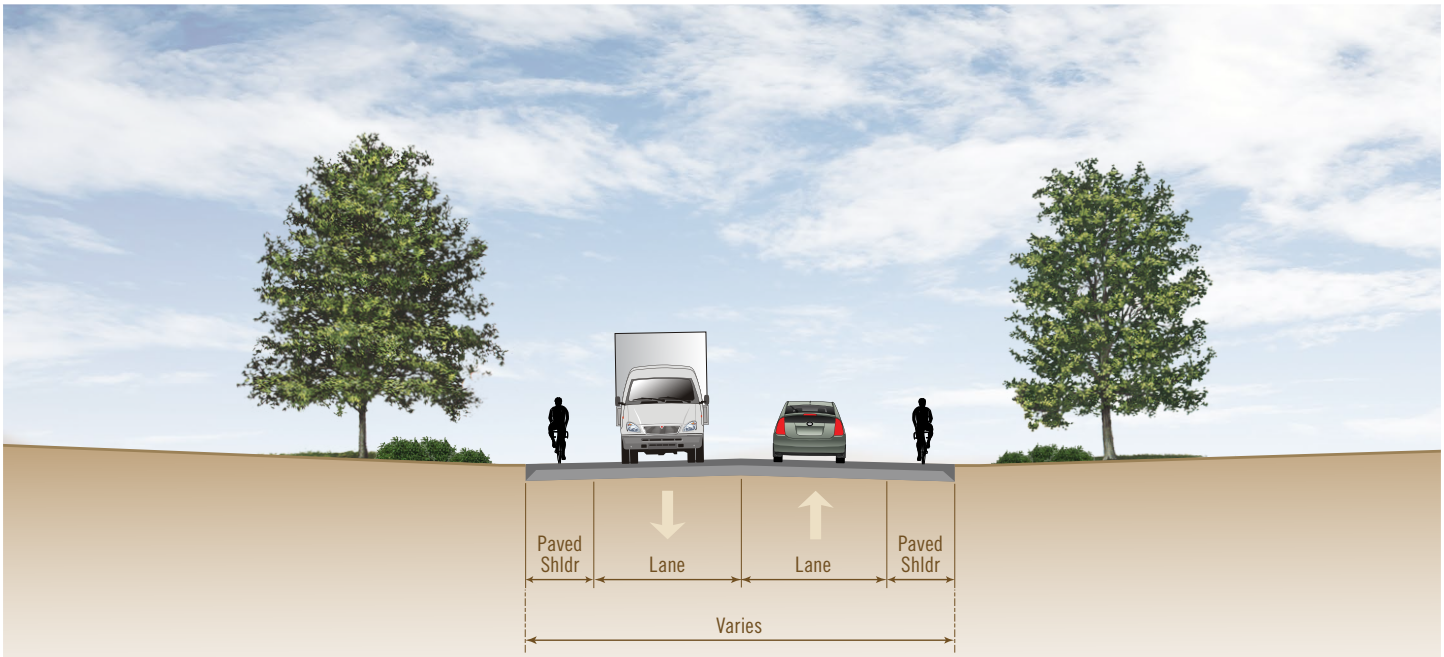
*14' minimum needed for motor vehicles to pass bicycles in the travel lane with 3' of clear. With less than 14' motor vehicles and bicycles will not be able to share the travel lane side by side.



Shared Lane (Less than 14’ Wide)

Shared Lane* (2012 AASHTO Bike Guide Section 4.6)

*14 feet minimum needed for motor vehicles to pass bicycles in the travel lane with 3 feet of clear. With less than 14 feet, motor vehicles and bicycles will not be able to share the travel lane side by side. A Shared Lane less than 14 feet wide is typically appropriate for roadways with a speed limit of 25 miles per hour or less, but may be appropriate on roadways with higher speed limits if there is a low volume of motor vehicles. Shared Lane Markings should only be used on roadways with a speed limit of 35 mph or less (2009 MUTCD Section 9C.07).



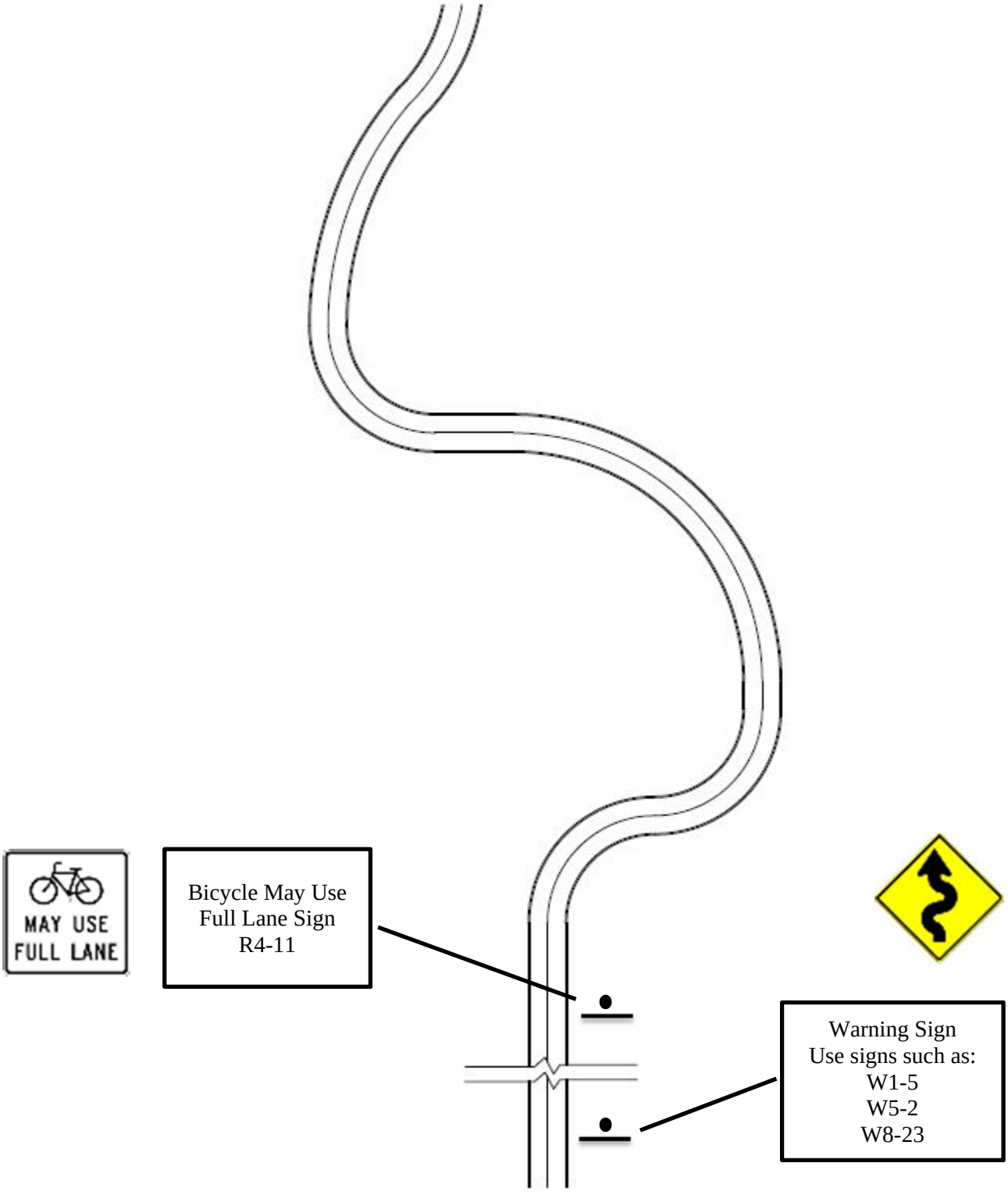
Paved Shoulder

Travel Lane: 10'-12'
Paved Shoulder: 4' minimum

APPENDIX E

BICYCLE FACILITY SIGNS

Sign Placement



Warning Sign

W1-5 – Horizontal Alignment Warning Sign

W5-3 – One Lane Bridge Sign

W5-1 – Road Narrows Sign

W8-23 – No Shoulder Sign

W5-2 – Narrow Bridge Sign

W8-25 – Shoulder Ends Sign

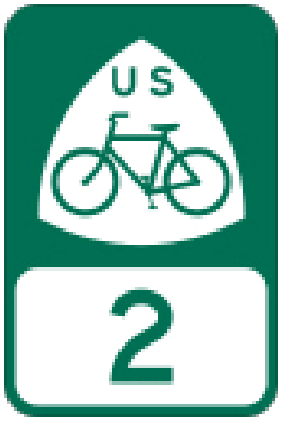
Regulatory Signs for Bicycle Facilities

R4-11 – Bicycle May Use Full Lane Sign

This sign should be installed after a warning sign and in advance of the area

Guide Signs for Bicycle Facilities

D1-3c – Bicycle Guide Sign



M1-9 – Bicycle Route Sign (US Routes)

M1-8a – Bicycle Route Sign (Regional Routes)

*Guidance on how and when these signs are to be used can be found in the latest version of the Manual on Uniform Traffic Control Devices.